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# TRANSPORTATION

SONOMA COUNTY GENERAL PLAN SUMMARY





# TRANSPORTATION ELEMENT

SONOMA COUNTY GENERAL PLAN

## SUMMARY

County planning  
Transp

Sonoma Co.  
11 11

ADVANCED PLANNING DIVISION

SONOMA COUNTY PLANNING DEPARTMENT

NOVEMBER 1975

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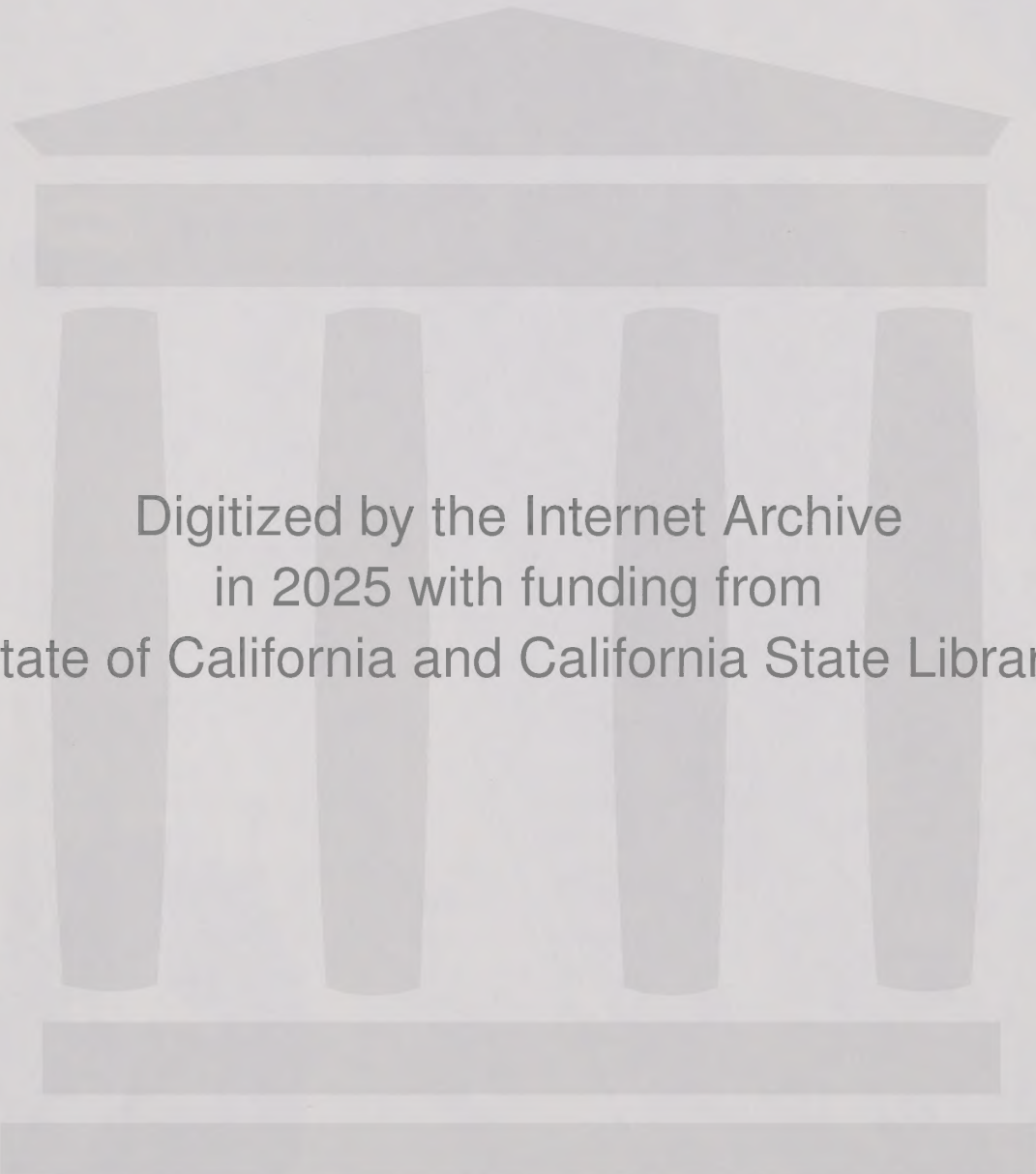
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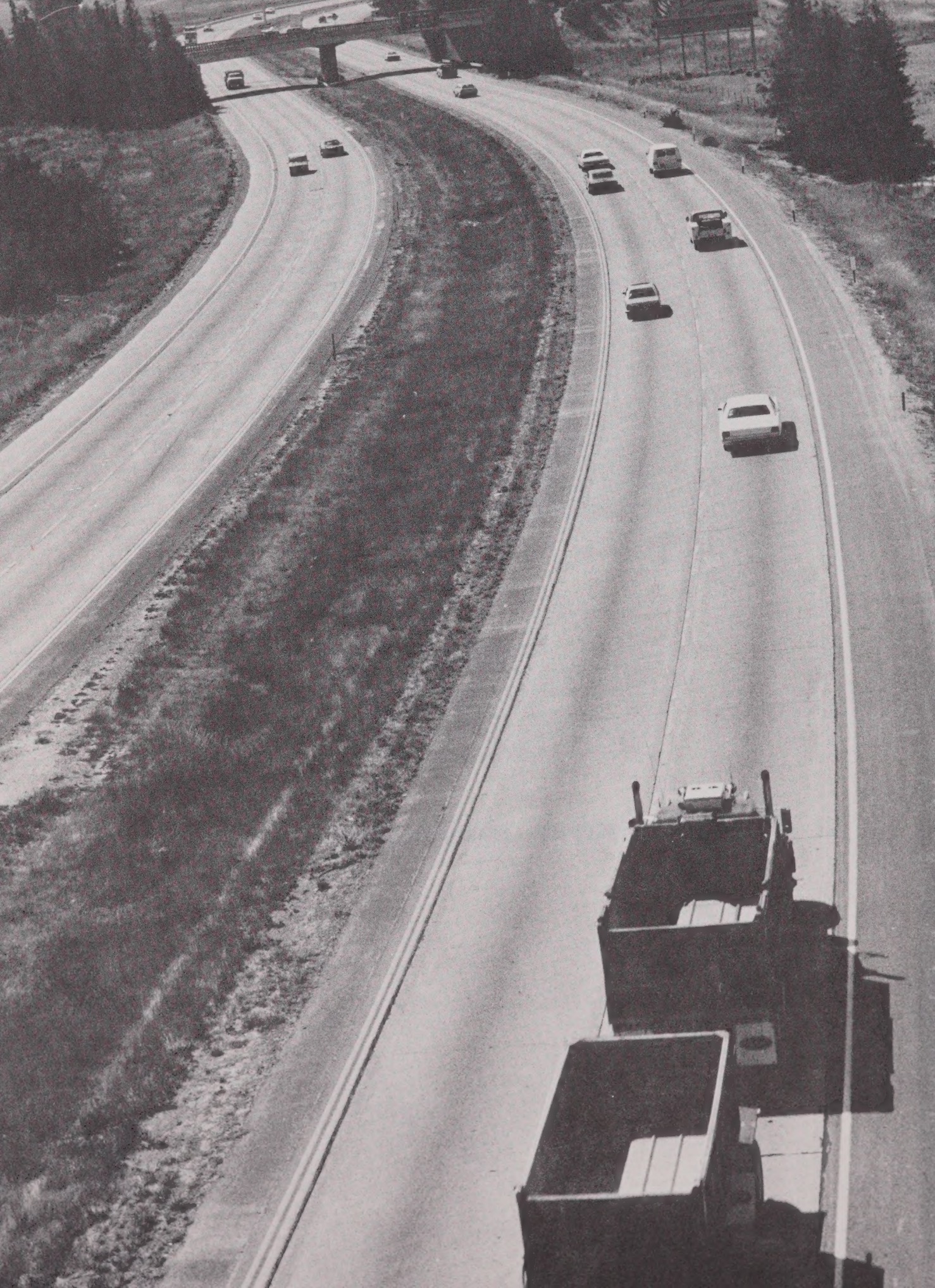




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# INTRODUCTION

## BASIS FOR ELEMENT

The Sonoma County General Plan is a long-term general plan prepared for the physical development of cities and the County. It is a response to the California Planning and Zoning Law which provides for, and makes mandatory the preparation of such a plan. Three comprehensive elements comprise the Sonoma County Plan.

Physical development and economic and social relationships of Countywide significance are the subject of the Community Development Element, which focuses on the Land Use and Housing Elements.

The Environmental Resources Management Element is composed of Open Space, Conservation, Seismic Safety, Safety, Recreation and Historic Preservation Elements and responds to environmental concerns.

Circulation, Transit, Noise, Air Quality, Scenic Highways, Bikeways, and Aviation Elements are included in the Transportation Element, which is the subject of this report.

The Elements of the General Plan are all, in varying degrees, related and interdependent, and together they provide the policy framework to guide the physical development of Sonoma County.

Two products of the Transportation Element, the Circulation and Transit Plans, respond to and support the Land Use Plan included in the Community Development Element. In addition, environmental factors developed during the preparation of the Environmental Resources Management Element were included in the evaluation framework used to select transportation routes and facilities.

The Planning Process utilized in the General Plan Program is based on a recognition of the interrelationship between land use and transportation. The preparation of the Transportation Element was achieved by determining the transportation system impacts and requirements of the Land Use Plan and making adjustments in the latter when a feasible transportation response could not be worked out. Along with

other General Plan Elements, the Transportation Element is intended to provide a guide and framework for more detailed city and county plans. It does not replace these plans, and may in certain instances conflict with some of them in terms of policy recommendations and mapped expressions. It is hoped that where pertinent and acceptable, municipalities will adopt the Transportation Element or portions of it as additions or alterations to their own general plans.

This report is a summary of the transportation related information, issues and recommendations constituting the Transportation Element, and is one of two volumes of the Element. The second volume contains supporting technical information.

Adoption of the Transportation Element will supersede the 1958 Trafficways Plan and will amend and supersede the Transportation Element incorporated in the Sonoma County interim General Plan adopted in 1973.

#### REGIONAL PERSPECTIVE

Sonoma County lies between the heavily urbanized portions of the Bay Area to the south and vast natural and recreational resources of the Redwood Empire to the north. The major route connecting these areas, Highway 101, traverses the central portion of the County. As well as being the principal arterial in the County's highway system, it is an important element of the Statewide system, carrying the majority of the traffic between the Bay Area and the coastal population centers. Farm and forest products from the northwest part of the State are brought south to processors and consumers, while manufactured goods, fuels, and other finished products are taken north. Also, Sonoma County is still the largest dollar-value agriculture producer in the Bay Area.

While still one of the least urban of the nine greater Bay Area Counties, the southern portion of Sonoma County is experiencing the same growth pressures that changed Marin and central Contra Costa Counties from rural to residential areas. This suburban type residential development, dependent upon employment in the urban areas to the south, has shown considerable growth in recent years with a corresponding increase in commuter traffic across the southern County border. Both from transportation and land use considerations, the question of commuting is



one of the issues to be addressed in implementing the General Plan.

The majority of employment available in Sonoma County is located in the Santa Rosa area, which is the trading center for an area extending into parts of Napa, Lake and Mendocino Counties. This center of activity is creating a radial transportation system allowing access to Santa Rosa from the surrounding region.

Sonoma County attracts a large amount of recreational travel. The Russian River area, the coast, the many State parks, and the wineries accommodate an estimated three million visitors a year. If fully developed as planned, Lake Sonoma could become another major recreational resource, attracting visitors from throughout the Bay Area.

As one of the nine Bay Area Counties, Sonoma is responsible to the Metropolitan Transportation Commission (MTC) for expenditures of State Transportation Development Act or federal funds on transportation. MTC's primary responsibility is for elements of the transportation system which are of regional significance or which are relevant to regional needs, objectives, and policies.

Development of the Transportation Element of Sonoma County's General Plan was carried out in this regional context. Plans and policies adopted by MTC were studied and a continuing coordination was maintained with current planning programs in Marin and other adjacent counties. The Transportation Plan, as with the Land Use Plan, is uniquely Sonoma County's. However, every effort has been made to ensure the plan is compatible with those of surrounding Counties and the region. Assisting in this regard has been an intergovernmental technical advisory committee formed in 1973.

#### PLANNING APPROACH

The transportation planning work was designed to incorporate into the analysis the unique characteristics of Sonoma County and its related transportation needs. Particular attention was given to three major areas of concern:

1. Transportation needs (mobility and accessibility).
2. Community factors (effects on the urban environment, neighborhood integrity, socioeconomic

opportunities, etc.)

3. Environmental quality (noise, visual impacts, effects on topography, vegetation, air quality, etc.).

The resulting recommendations for the Transportation Plan are intended to reflect the most effective means of serving the County's transportation needs while helping achieve its social, economic, and environmental goals.

#### DEVELOPING THE TRANSPORTATION ELEMENT

The transportation plan development work evolved through several phases. In the early stages a detailed inventory was made of transportation and related data. The main elements of this were as follows:

Land Use and Demographic Data - Specific data relating to population and employment was developed for 1973 which then formed the starting point for making projections to the year 2000.

Transportation Data - Various data were collected on existing travel in the County. This included regional travel data for the nine-county Bay Area, special traffic generation surveys at selected facilities in Sonoma County, and a comprehensive inventory of traffic counts.

Transportation Facility Data - A detailed inventory was made of the transportation facilities in the County. The highway network was divided into segments and for each segment the physical characteristics were recorded. This included road width, number of lanes, speed, traffic volumes, and other characteristics relating to the physical configuration. Similarly, a detailed inventory was made of the existing transit service and facilities in the County.

The magnitude and spatial pattern of travel in the County is directly related to the number of residents and the spatial distribution of land use. The locations of people and jobs determine the pattern of work travel. Social and recreational opportunities create transportation desires between the associated areas of activity. Transportation needs are thus defined in terms of the people living in the County (and projected to live in the County) and the



land use structure within which they live. Future transportation needs for Sonoma County were thus forecast based on specific patterns of land use.

Following the data collection work, special planning techniques were developed for use in the plan development process. One of the major developments in that phase was a traffic forecasting process in which population and employment could be converted into estimates of travel on the transportation network. This meant that for any given allocation of population and employment, the resulting travel demands could be estimated. The travel forecasting techniques provided the ability to forecast both weekday and weekend travel. For most of the County, particularly in the urbanized areas, the critical traffic situation is the weekday peak. However, in certain areas such as the north coast and Russian River the principal traffic demands occur on summer weekends. For analyzing this weekend travel situation, various assumptions were made with respect to future recreational activity and an analysis made of the traffic implications of each assumption.

The traffic forecasts and initial analysis work were carried out for a growth situation for the year 2000, termed Baseline. It assumes a continuation of present trends and policies and was a Baseline from which alternative growth concepts were developed. The transportation analysis was aimed at assessing the ability of the existing street system to carry the Baseline forecast traffic demands for the year 2000. Traffic forecasts for each link of the network were compared with the existing highway capacities and capacity deficient situations were identified.

The deficiency analysis was carried out for both weekday and weekend travel projections. Since recreational travel comprises a large component of traffic on corridors which have critically high weekend demands, various assumptions were made regarding future recreational travel. These ranged from moderate growth (double the present-day demand) to high growth (three times the present-day demand). Also, the effect of major recreational activity at the Warm Springs Dam area was examined.

Another major development in the special planning techniques phase was the development of air quality projections in a joint project conducted by the Sonoma County Planning and Public Works Departments,

the Bay Area Air Pollution Control District, and the Association of Bay Area Governments. This computer-oriented project converted population, employment and land use data into stationary source pollutant emissions, and vehicle travel data into mobile source pollutant emissions. The Baseline analysis was performed separately for each of two assumptions related to auto emission control: 1) Full and effective implementation of the Federal Motor Vehicle Emission Control Program according to the 1973 schedule, and 2) no further vehicle emission control beyond 1973.

Results of the Baseyear analysis indicated that air quality in Sonoma County was generally good except for marginal air quality in the downtown Santa Rosa and downtown Petaluma areas. Air quality standards for carbon monoxide, oxidant and suspended particulates were exceeded occasionally in both of these areas during 1973.

Results of the Baseline analysis revealed the importance of motor vehicle emission control in the fact of continued growth. Under the assumption of full and effective control, air quality standards should be met throughout Sonoma County except in the Petaluma area where some lingering problems are anticipated in connection with industrial emissions of sulfur oxides and particulates. Without vehicle emission controls, air quality standards for most pollutants will be exceeded frequently along the Petaluma-Cotati-Santa Rosa corridor with air quality in Santa Rosa approaching levels currently observed in urban areas such as San Jose. Except for downtown Sebastopol and Sonoma, areas outside this corridor should meet air quality standards even without vehicle control.

Even under the assumption that full and effective emission control is established, it is important to realize that along the Highway 101 Corridor the margins between emission levels and standards for healthful air quality are not at all large due to the off-setting influence of industrial sources and substantial increases in population and attendant vehicle miles travelled. The particulate pollution levels in year 2000 are, in fact, projected to be even higher under full control than in 1973, with the possibility of occasional exceeding of the California 24 hour standard.

As a result of both the land use and transportation evaluation work, the Baseline distribution of growth



was judged as contrary to fundamental goals and policies of Sonoma County. Three alternative sketch plans were then prepared to reveal general options which would be more consistent with County growth policies. These alternatives to Baseline were titled City-Centered, Rural County/Dispersed, and Decentralized.

A comprehensive analysis was made of these three sketch plans in which all the implications were examined and a general indication was obtained as to a desirable growth alternative from Baseline. While none of the three sketch plans were judged to be fully compatible with County policies, the principles embodied in the City-Centered and Decentralized alternatives were considered to be worthy of further analysis.

Two further land use plans were then developed, based on a "Community-Centered" concept. The first involved a population level of 480,000 by the year 2000, as in Baseline, and the second assumed a population level of 380,000. Alternative long-range transportation plans were prepared to support the two sketch plans. In some cases, transportation deficiencies identified in the Baseline analysis were alleviated, while in others they were increased. Various ways of overcoming the deficiencies were devised for both land use plans.

For the purposes of developing the Plan, Sonoma County was divided into nine planning areas. With the exception of the Coastal Planning Area and the Russian River Planning Area, these are centered around the major urbanized areas in the County.

Since many of the transportation deficiencies occur in and around the urban areas, alternative improvements were developed separately for each Planning Area. In most cases the alternatives in one area were independent of those in adjacent areas. The alternatives represented different means of providing sufficient capacity to satisfy the forecast traffic demands. In some Planning Areas, such as Santa Rosa, the plans were based on alternative circulation concepts. In others, such as Healdsburg, the transportation alternatives corresponded to specific land use alternatives.

The result was a set of land use and transportation plans for each Planning Area. These were evaluated

and Preferred Land Use and Transportation Plans selected for more detailed testing. The Land Use Plan projected a population of 430,000 for the year 2000, and this was taken as the basis for developing the final set of transportation recommendations given in this report.

The basis for the evaluation of alternatives was the set of transportation goals and policies that were developed for Sonoma County. Criteria were established for measuring goal achievement and the appropriate criteria applied to each alternative. The transportation goals can generally be grouped into two categories. The first relate to positive achievement levels such as accessibility, mobility and modal balance. The second group are concerned with cost and impacts and were considered in a negative sense.

The evaluation was carried out, planning area by planning area, rating the various alternatives according to the goal achievement criteria. The main differences in each case were determined; and, based on local values and concerns as identified from community participation work, the various goals were accorded different degrees of importance and a preferred alternative selected. Subsequent refinement led to the recommended plan presented in this report.

#### BALANCED TRANSPORTATION

The Sonoma County Transportation Goals and Policies emphasize the need for a balanced transportation system - that is, a system balanced with respect to different modes, is supportive of the land use plan, and is cognizant of the fiscal restraints inherent in planning transportation improvements to meet projected needs.

To achieve a balanced transportation plan, several important premises were established as the basis for the recommendations contained in this report.

1. A Land Use Plan That Directs Future Growth In the County.

Transportation and land use are mutually dependent, and in a balanced plan there is a full integration of the land use and transportation elements so that each is compatible with and supportive of the other.



The Land Use Plan based on a community-centered concept will direct future growth in a manner that will allow a compatible program of highway and transit improvements to be implemented to serve this future growth.

## 2. Maximum Utilization of Non-Highway Modes.

The transportation plan is aimed at serving all segments of the population in the County, not only those with access to a private automobile. The establishment of a coordinated Countywide transit system is thus an immediate priority in the implementation program for the circulation element. At the same time the plan seeks to continually increase the role of transit in serving future travel needs. With energy shortages and higher gasoline costs now becoming a reality and with diminishing financial resources for highway construction, there is clearly a need for a viable alternative means of transportation, and here transit must play its part.

## 3. Auto Use Strategies.

Even with the maximum feasible diversion to transit, the projected demands on the Sonoma County highway system will place a severe strain on the financial resources available for funding future improvements. It is apparent that in many situations, particularly in the larger urbanized areas such as Santa Rosa, better use will have to be made of the street system so that large-scale improvements can be kept to a minimum.

Auto use strategies are a means of encouraging private auto users to make more efficient use of the highway system. Two strategies that are recommended are increased vehicle occupancy (carpooling) and the spreading of peak demand periods (by staggering work hours, for example). These types of strategies will require participation and commitment from all sections of the community, with Government agencies playing lead roles both through example and through positive incentive policies.

## RELATIONSHIP OF COMPONENTS

All components of the Transportation Element relate to the Circulation Plan and, in varying degrees, are interdependent.

The Transit Plan uses the circulation pattern established in the Circulation Plan which also provides

access to airports in the County. Air quality concentrations and noise impacts are derived from traffic volumes associated with the circulation pattern. Transportation oriented bikeways are dependent on the circulation system and recreational bikeways use the same to a large degree. Finally the circulation system determines the location and, to some degree, extent of scenic highways.

Other relationships and dependencies exist such as recreational bikeways utilizing scenic highways, the importance of noise around airports, and the reduction of air quality problems by increased transit and bicycle use. No attempt has been made to specify all relationships and interdependencies; however, the coordinated approach used in development of the Transportation Plan assures that the various components reinforce one another.





## COUNTYWIDE INTRODUCTION

Transportation, in today's complex environment, has become an integral part of people's daily lives, and meeting the transportation needs of an increasingly mobile public is an important concern in enhancing the quality of life for persons in Sonoma County. At the same time, care must be exercised to assure that the facilities required to provide mobility do not in turn degrade that quality of life. The overall aim of the Circulation Element presented here is to provide adequate mobility while helping achieve the social, economic, and environmental goals of the County.

The Circulation Element is a sub-element of the Comprehensive Transportation Element of the General Plan. It is concerned with the means by which people in the County can enjoy personal mobility and the facilities needed to provide for this mobility. The two modes of travel included in the Circulation

# CIRCULATION AND TRANSIT





Element are private auto and public transit. This element of the General Plan is therefore a long-term transportation plan which defines improvements to the street and highway system, sets out strategies for increased public transit service, and presents implementation policies related to these two modes.

## GOALS AND POLICIES

In developing the transportation plan, three major areas of concern have been stressed:

1. Transportation needs (mobility, safety, accessibility, etc.).
2. Socioeconomic opportunities and restraints (community needs and desires, financing capability, compatibility with other planning goals, etc.).
3. Environmental quality (natural resources, community impacts, etc.).

These three areas of concern are expounded in a set of transportation goals and policies for Sonoma County. The goals set out the basis for preparing a transportation plan and outline specific policies which should be followed during implementation.

### Goal A

It shall be the goal of Sonoma County to have a dynamic transportation plan that provides for changing needs and new technologies.

The Transportation Plan is cognizant of the fact that over the twenty-five year planning period, needs will change and new technologies will provide new opportunities for transportation improvements. In developing the plan, emphasis was given to selecting alternatives which would provide this type of flexibility. One of the key criterion was the ability for a given set of improvements to be stage-constructed with each stage providing benefits.

### Goal B

It shall be the goal of Sonoma County to have an integrated transportation system that provides safe and efficient service for the movement of goods and for the travel needs of all citizens.

To this end, it shall be the policy of Sonoma County to:

1. Provide adequate access to jobs, shopping areas, social services, and recreation facilities by the most efficient means.
2. Plan transportation routes (not necessarily roads) which will provide public access to public lands where practicable.
3. Provide fully accessible transportation services and facilities responsive to the needs of the young, aged, handicapped and disadvantaged.
4. Give a high priority to transportation projects which are designed to improve the efficiency, safety and quality of existing facilities, if feasible.

This goal explicitly states that residents of the County desire a transportation system which provides adequate mobility. In developing the transportation plan, the extent to which transportation improvements would provide safe and efficient service was continually assessed and provision of sufficient capacity was one of the basic premises of the plan.

#### Goal C

It shall be the goal of Sonoma County to have a transportation system that provides for the specific unmet needs of the socially, economically and physically disadvantaged.

To this end, it shall be the policy of Sonoma County to:

1. Require that the transportation system be developed in such a manner that the elderly, the handicapped, the youth, and the citizens of limited means will not be deprived of the opportunity to participate in the full range of human activities often denied them by reason of insufficient mobility.

This goal provided the basic rationale behind the transit components of the plan - that is, concentrating first on serving the unmet transportation needs of specific segments of the population and then looking to divert auto users to transit by further investment in public transit service improvements.



## Goal D

It shall be the goal of Sonoma County to have a transportation system that provides the optimum combination of modes insofar as is financially and physically feasible.

To this end, it shall be the policy of Sonoma County to:

1. Evaluate the suitability of all modes of transportation and strive for the development of alternatives to the private automobile.
2. Keep abreast of technology with regard to new modes of transportation with the purpose of upgrading present systems.
3. Design and develop transportation routes to accommodate, wherever practicable, planned transit systems, bikeways, equestrian trails, and pedestrian facilities, as well as automobiles and trucks.
4. Strive to utilize existing railroad rights-of-way for future transportation needs, utility corridors, and recreational uses, purchasing where necessary.
5. Maintain the Petaluma River and Bodega Harbor as potential waterway transportation routes.
6. Develop a plan for a countywide system of air travel facilities to meet the needs of the citizenry of Sonoma County.
7. Develop Sonoma County Airport as the only feeder airport in the County capable of handling medium commercial carriers; such carriers would connect with the major regional airports; maintain the smaller airports in the County as bases for light aircraft only, with appropriate clear zones around these facilities; avoid residential development in airport zones.
8. Regard public transportation as a public service and provide subsidies for public transportation systems when necessary.

This goal expresses the concept of 'Balanced Transportation'; and emphasizes the need for a system which is in balance with respect to transportation demands, use of different modes, and fiscal capability.

The social and economic advantages of maintaining a high level of mobility must be weighed against the environmental impact and the ability of a community to pay for that mobility. In developing the transportation plan, considerable attention was therefore given to assessing the degree to which future transportation demands can or should be met and to seeking a realistic balance between investment in highway and transit facilities.

#### Goal E

It shall be the goal of Sonoma County to have all modes of the transportation system planned, developed, operated and maintained with a high level of intergovernmental coordination and citizen participation.

To this end, it shall be the policy of Sonoma County to:

1. Integrate Sonoma County's public transportation with the regional public transportation system of other counties.
2. Review with local agencies and citizens' committees the priorities for highway construction, transit or other transportation facilities.
3. Work with other agencies to assure that regional transportation plans are consistent with Sonoma County land use policies.
4. Actively solicit effective citizen involvement at the initial stages of planning and development of transportation facilities and services.

The need for local citizen participation in the planning process and coordination with involved agencies is aptly stressed in this goal. Such participation and coordination has been an integral part of the planning process and should continue as the plan is implemented.

#### Goal F

It shall be the goal of Sonoma County to have a transportation system that is consistent with the social, economic, and environmental goals of the County and designed to effectively support and realize such goals.



To this end, it shall be the policy of Sonoma County to:

1. Require Cost-Benefit studies on proposed major transportation projects, including: quantitative analysis of economic costs and benefits, and qualitative analysis of social costs and benefits.
2. Assure that development of, or expansion of transportation routes serving major traffic generating areas are compatible with the goals and policies established for intervening areas.
3. Require environmental impact statements prior to construction of transportation facilities.
4. Assure that the transportation system is designed to minimize social and economic disruptions to communities and neighborhoods.

#### Goal G

It shall be the goal of Sonoma County to have the transportation system and all its components recognized as mutually interdependent and interrelated with land use activities and densities.

To this end, it shall be the policy of Sonoma County to:

1. Require that the transportation system support the land use plan.
2. Require that transportation and land use planning are coordinated to avoid overloading the transportation system.
3. Regard goals relating to community form and identify as highly important factors in transportation system development.
4. Assure that land use decisions give strong consideration to minimizing the requirements for travel.
5. Discourage land use activities that are inconsistent with functional uses of transportation facilities; e.g., residential properties fronting on arterial highways and inadequate access to public transportation on the arterial for pedestrians.

The 'Community Centered' concept formed the framework around which both the land use and transportation plans have been developed. One therefore supports the other, and this goal, with its associated policies, strongly urges that future land use and transportation decisions be consistent with this basic theme.

#### Goal H

It shall be the goal of Sonoma County to have a transportation system that has high environmental and aesthetic quality.

To this end, it shall be the policy of Sonoma County to:

1. Plan proposed transportation routes, including major and secondary highways, bicycle and bridle paths to be compatible with natural processes and land forms.
  - a. Geological features, including fault zones, slide and erosion areas, shall be carefully considered.
  - b. Lands with prime natural resources - agriculture, forests, recreation, scenic, etc. - shall be protected.
2. Treat landscaping as an integral part of transportation constructions and emphasize use of native trees and plants.
3. Protect the roadside (scenic corridors) or scenic highways in the County by scenic highway zoning.

While mobility is a desired quality as expressed in Goal B, these two goals emphasize that mobility should not be achieved at the expense of environmental quality. In developing the transportation plan, considerable effort was placed on evaluating the environmental impacts of planned improvements and seeking alternatives with minimum impacts.

#### BALANCED TRANSPORTATION

The need for a balanced transportation system is emphasized in the goals and policies presented in the last section. Key factors in a balanced transportation plan are land use, transportation demands, and fiscal resources. The plan presented here seeks to achieve a realistic balance between the needs and restraints inherent in each of the three.



The level of travel demand on the transportation network is a function not only of the level of population but also of the spatial distribution of that population. It is the relationship between where people live in the County and where they carry out their daily activities that creates the daily pattern of travel demand. A different pattern of land use implies a different pattern of travel demand.



As part of the transportation study, an elaborate travel forecasting procedure was developed which enabled future travel demands to be estimated for different population levels and different patterns of land uses. One of the initial uses of this procedure was to look at travel demands based on a land use pattern which could arise if present growth patterns and land use policies continue. That land use pattern was termed "Baseline", and projected a population level at 480,000 by the year 2000.

Based on the travel demands for the Baseline land use pattern, transportation plans were developed for needed improvements to the existing system. Consistent with the Baseline assumptions, these initial plans assumed a continuing emphasis on auto travel as the principal transportation mode. The highway improvements represented the best means of catering for almost 100 percent of future travel demands, while the transit improvements represented a basic County-wide system which would provide service to those segments of the population which do not have an auto available.

The analysis of the Baseline growth situation resulted in several significant conclusions. First and foremost was that regardless of transportation, Baseline was judged as being in conflict with many of the County's land use goals. This conclusion led to the development of various alternative land use plans and eventually to the Community Centered concept which provides the central theme for the land use pattern in the General Plan. A second was the difficulty

in satisfying the projected demand throughout all the County without creating significant environmental impacts in certain areas. Thirdly, the amount of expenditure needed for highway capital improvements was judged to be too high, particularly in the face of diminishing funds for highway financing. It was apparent, therefore, that a transportation plan based on these assumptions would be in conflict with the County's social, environmental, and economic goals.

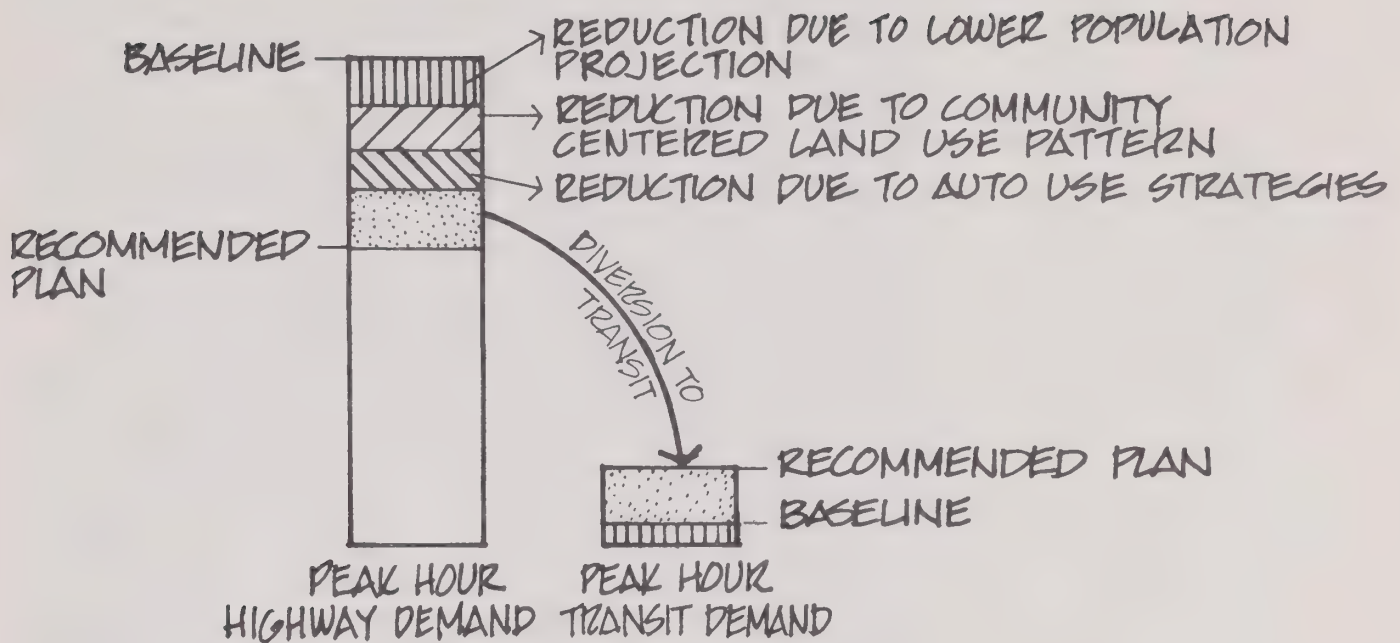
Subsequent land use plan development work investigated various alternative land use configurations, resulting in the Land Use Plan recommended for the Sonoma County General Plan. This plan projects a population of 430,000 by the year 2000, and provides the basis for the Transportation Plan presented in this report.

In departing from Baseline and developing a more balanced transportation plan for the County one of the principle commitments was reducing the scale of improvements needed for the highway system. Various alternatives were examined and based on such factors as compatibility with the Land Use Plan, cost, environmental impact, and ability to satisfy the travel needs, the final recommended plan was selected.

The recommended Transportation Plan has sufficient capacity to serve only 65 to 75 percent of the peak highway demand projected for Baseline. It does, however, provide sufficient capacity to serve the total demands of the Land Use Plan.

Several factors are involved in this lowering of the peak hour highway demand from the Baseline level. First, the lower population projection of 430,000 versus 480,000 for Baseline reduced the overall travel demand. Second, the Community Centered concept on which the Land Use Plan is based, reduces average travel distances due to more efficient location of land use. Further reduction is then achieved by making more efficient use of the highway system and encouraging a substantial diversion to transit in critical corridors.

The situation can be depicted as follows:



Some of the reduction is thus achieved by land use planning (that is, by implementing the Land Use Plan), some by auto use strategies, and the remainder by diversion to transit. The contribution of each will vary throughout the County, with the percentages being considerably greater in some corridors, and lower in those areas where reductions due to auto use strategies or opportunities for transit diversions are fewer.

The three premises which form the basis of the circulation element of the General Plan are therefore as follows:

1. A Community Centered Growth Concept Which Directs Future Growth in the County

A growth pattern which is oriented to the Community Centered concept will reduce average travel distances and thus reduce total vehicle miles of travel demand on the system. Depending on the degree to which housing policies can support the plan by providing suitable mixes of housing within communities, at least five percent and as much as ten percent reduction in average travel distances is possible compared to the present day travel patterns.



## 2. Diversion to Transit

An intensive effort to maximize transit usage will be necessary. When looking at corridors with future highway deficiencies, it is tempting to see the solution simply as providing "more transit". Unfortunately, the solution is not so straightforward and a successful transit system for the County will require systematic planning with realistic strategies being implemented to specifically increase transit usage. Apart from capacity considerations, the anticipation of possible energy shortages and higher gasoline costs in the future clearly shows a need for a viable alternative means of transportation and here transit must play its part.

However, due to the inherent low population density of Sonoma County and the dispersion of origins and destinations there are practical limits to the role that transit can have in supplanting automobile travel. Transit currently accounts for only a fraction of 1% of the trips in the County. In order to capture 30% of the current weekday trips, the transit system annual costs would have to be on the order of \$6,000,000 for intercity service and \$70,000,000 for intracity service. Therefore, while transit can provide relief to specific corridor problems it is not as cost effective in the total travel picture as changes in land use patterns or changes in auto use strategies that increase vehicle occupancy.

The short-range transit plan for Sonoma County is aimed at primarily serving low-mobility groups--those without access to a private automobile. The long-term transit plans are then directed at building on this transit system to provide increasing emphasis on reducing automobile use. Within the restraints inherent in the type of low-density living enjoyed by Sonoma County residents, opportunities for increased transit usage are identified in the transportation plan. For example, specific corridors are designated for transit preference operation. The high level of transit service in these corridors is intended to divert auto users to transit and encourage various transit usage opportunities such as park'n ride and special shuttle operations. At the same time they can, and must, provide a nucleus for structuring residential density so that land use truly supports the goal of increasing transit usage.

## 3. Auto Use Strategies

Auto use strategies are aimed at encouraging private auto users to make more efficient use of the highway system. Two strategies which need to receive active consideration are increased vehicle occupancy (car pooling) and the spreading of peak demand periods (by staggering work hours, for example). These types of strategies require participation and commitment from all sections of the community, with Government agencies playing lead roles both through example and through positive incentive policies.

The Circulation Element of the General Plan consists of a set of improvement plans and strategies for implementing the transportation goals and policies. The underlying purpose is to develop and maintain an integrated multi-modal transportation system which can provide mobility to all segments of the population.

The Transportation Plan defines the circulation system and sets out the highway and transit improvements which need to be made over the next 25 years to support this circulation system. A description of the plan is given in the respective highway and transit sections which follow. The other aspect of the Circulation Element is the set of strategies which provide policy-related directives to support or extend the established policies within the transportation goals. These are discussed in the implementation section.

## TRANSIT

### INTRODUCTION

The long-range transit plan concept for Sonoma County is based on the type of urban structure that will be planned for in the future as portrayed in the Community Centered concept. This will encourage activity centers such as existing Central Business Districts (CBD's) to be the nuclei of future growth patterns.

The transit system will provide local service between the residential areas and the activity centers within communities and inter-community service between the activity centers of the different communities. People in a community can make a particular activity center their primary place of travel and then be able to reach other centers for secondary activities.

In developing a countywide transit system for the County, the intent is to first of all focus on the needs of the low mobility segments of the population. These are persons who do not have access to a private automobile and hence their ability to fulfill their



daily travel needs is currently restricted. This "captive" transit market, as it is termed, generally includes the elderly, young, economically disadvantaged, handicapped, and households without automobiles. However, within this group the needs and opportunities vary widely. Some of the important characteristics which were considered in developing the transit plan program were as follows:

#### The Handicapped:

As a group, the handicapped tend to be the least well-served in a community. Even when there is extensive transit service, a physical handicap which prevents owning or operating an automobile can equally well prevent the person using public transit. Specified travel barriers that have to be eliminated from most public transportation modes to make them accessible to the handicapped (and in many cases to the elderly) include:

- . architectural and design barriers
- . movement-oriented barriers
- . crowding and terminal design barriers
- . accessibility (locational barriers)

In most communities, if the needs of these people are being met at all, it is generally by volunteer organizations or by special welfare services run as part of medical care programs. Their needs are characterized by:

- . demand-responsive
- . door-to-door service
- . personal assistance

In some cases these special requirements can be met by suitable equipment on the transit vehicles. In others, such as where personal assistance is necessary or access to a bus stop is difficult, special service is required. (The transit plan recommends a mixture of both special equipment and special service).

#### The Elderly:

Many of the transit needs of the handicapped apply to the needs of the elderly. In fact, over fifty percent of handicapped persons are over the age of 65. Many studies have been made of the transportation needs of the elderly and their needs are



probably better understood than most other groups (which is not to say the needs are being met). Apart from the basic need for mobility, some of the less obvious needs which have been found include:

- making the system comprehensible and predictable (it has been found that many elderly people will stay at home rather than undergo the sometimes monumental task of reading, decoding, deciphering, and comprehending a bus schedule or route map)
- making the system amenable to use as a social experience setting
- providing a total mobility system, e.g., providing a bus service from downtown to a special facility such as the hospital does little to relieve the transportation barrier when a person has no means of traveling to the downtown area

The needs of the elderly particularly reinforce the concept behind the transit plan which is to provide total transportation within the County.

#### The Young:

Apart from school trips, a young person's mobility is dependent to a large extent on the family car ownership level. In this respect, their needs are similar to those of people who are neither handicapped nor elderly but who are transit captive because of no access to an automobile. They can either be car passengers, ride transit (or perhaps bicycle), walk, or not make the journey at all.

#### The Disadvantaged:

The term "disadvantaged" in this context refers to those persons who are neither handicapped, elderly, nor young, but who do not have access to an auto. The reason may be low income, disinclination to hold a driver's license, or low car ownership in comparison to the number of family members requiring transportation.

The travel characteristics of this segment of the population are very similar to those who travel by private automobile. Work, shopping, social-recreational, and other travel needs occur daily and as with automobile travel the pattern of travel desires

are often widely dispersed. Once again, the need is for a total transportation system that will provide mobility both within a community and between communities.

#### SYSTEM CONCEPTS

The Transit Component of the Plan can be considered in two parts, intracommunity service and intercommunity service. Both combine to form a total county-wide transit service.

The principal system concepts which will be applied in providing the service are as follows:

##### Fixed Route Systems:

Fixed route systems, as the name implies, follow an established route, picking up and discharging passengers either at predetermined stops or randomly along the route. They may adhere to a schedule or be unscheduled and they can operate on shared rights-of-way with other modes or operate alone on exclusive rights-of-way.

The fixed schedule-fixed route transit system is the most common system in use today, and generally follows a fixed route, stopping at transit stops at pre-scheduled times. Another form of operation is the express service which normally operates between outlying points and high-activity centers with few stops in between. The other major type of fixed-route transit service follows a variable schedule, a common form of which is a jitney system operating along a fixed route in areas with a high degree of activity. In this operation, the patrons can flag down the vehicle at any point along the route and can request to disembark at any point along the route.

##### Demand-Responsive Transit Systems:

Over the last several years a form of transit which provides door-to-door service has been introduced and found to be feasible in many communities. Sometimes called "dial-a-bus" or "dial-a-ride", it consists of buses or vans which operate on a demand-responsive basis as follows:

1. persons requesting service telephone a central dispatcher and indicate when and where they would like to be picked up and where they would like to go.
2. the dispatcher logs this information and radios the appropriate bus advising of the request (over 15 vehicles generally require computer-assisted control)
3. within a predefined time limit the passenger is pickup up and taken to the desired destination. Between the time that the passenger is picked up and delivered to the destination, the bus may stop to pick up and/or drop off other passengers.

This type of service is particularly suited to special needs groups and for providing a basic service in small, low-density communities. Possible demand responsive systems include standard dial-a-ride, delay dial-a-ride, and rover dial-a-ride. Shared or subsidized taxi is another means of providing this type of service.

The traditional dial-a-ride operates with highly responsive service (for example, a call to dispatcher at least 45 minutes prior to desired time of pick-up results in passenger pick-up within 15 minutes of requested departure time). With delay dial-a-ride, the call-ahead time is increased, and may range from four hours to a day's advance notice. The rover dial-a-ride system is oriented to small communities that cannot support a full-time bus system of any kind, yet do not have any other means of public transportation. The rover bus is scheduled to come to a specific community once or twice per week, depending on the demand, and serves the people within that community on those days. In this way, each community has some service and passengers plan their trips on the days that the rover bus is serving their community. The primary advantage of the rover bus system over other dial-a-ride systems is that it requires a smaller financial outlay to serve a fixed number of persons.

Different sizes and types of vehicles can be used in various systems depending on the demand and the type of operation. The types of vehicles most suited to Sonoma County's needs are as follows:

Bus Wagon - this is a simple conventional van accommodating approximately eight persons and a driver



The minibus is a medium-capacity vehicle with seating capacity ranging up to 25 persons and often accommodating an equal number of standees

Conventional buses, with a carrying capacity of 40 to 45 seated and approximately 40 standing passengers, are used in areas of relatively high demand. While they have the advantages of higher capacity and longer operational life, their mobility is more restricted in terms of the ability to make sharp turns or navigate in tight or awkward streets or alleys

The expressway bus is a similar type of vehicle as the conventional bus, except the power train and gear ratios are specially selected for highway operation

As part of the long-range transit plan, specific corridors are designated as "transit intensive" corridors. These are intended for high-intensity transit development over a period of time, with future improvement schemes providing special transit priority treatment to aid fast high-frequency service in the corridor. Those located in urban areas are also designed to serve as the nucleus for the transit services which will extend out into the suburban areas and to provide a focus for the location of future high density development.

#### LONG RANGE TRANSIT PLAN

The long range transit plan is shown in Figure 1. Both the intra-community and intercommunity services are specified according to the amount of service and the corresponding target level split between transit and auto:

- . Low (L) - serving largely the low-mobility groups  
Modal split: 1-2% peak and off-peak
- . Medium (M) - diverting some auto users to transit  
Modal split: 5-10% peak, 1-5% off-peak
- . High (H) - offering an attractive alternative to private auto and diverting auto users to transit  
Modal split: 10-20% peak, 5-10% off peak

The two inserts in the transit plan figure indicate those areas in which transit intensive corridors are proposed. In addition to these, transit priority treatment is intended for Highway 101 between Santa Rosa and the southern border of the County. This will serve both intercommunity transit travel within the County and also commute travel out of the County. Freeway ramp metering is one feasible form of priority treatment and is recommended as a means of maintaining reasonable speeds on the freeway and allowing buses to have faster access to the freeway. In addition, when expanding to six lanes as recommended in the highway plan, the possibilities of exclusive lane operation should be explored.

Most of the transit intensive corridor treatment within urban areas is recommended for the City of Santa Rosa. A major diversion to transit will be necessary to maintain reasonable traffic flow within the recommended level of highway improvements in Santa Rosa. One east-west and two north-south corridors are therefore designated to form a basic transit intensive core of the Santa Rosa transit system. The east-west corridor would, for the most part, use Montgomery Avenue (passing through downtown). The north-south corridors are again focussed on downtown and connect with the major activity center around Steele Lane. One corridor is along Mendocino Avenue and the other is along a more westerly alignment utilizing Dutton Avenue.

In the City of Petaluma, Washington Street is designated as a transit intensive corridor. This corridor will connect East Petaluma with the commercial area in the west part of the City and provide a central east-west focus for the City.

The transit intensive corridors are designated so that future improvements to the highways which make up the corridors will incorporate transit priority treatment. Initially, buses will be the means of conveyance in the corridors. With advances in transit technology, continuing improvements can then be made to the type of vehicles and the means of operation. In the longer run, the use of systems such as light rail or other specialized types which future transit technology may make available could be feasible and should be considered. The essential feature of the plan is that once designated, the transit intensive corridors be given special consideration as improvements to the transportation system are made.

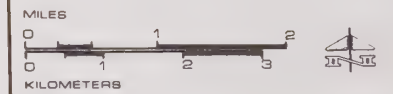
As part of the implementation program, the short-range transit plan for Sonoma County has specific recommendations for intracommunity transit. After this initial system is implemented, it will be continually monitored and upgraded based on actual operating experience. The long-range plan does not therefore contain specific recommendations for intracommunity service, but rather provides target levels for the amount of service (low, medium, or high as described previously).



# CIRCULATION

FIGURE 1

## LONG RANGE TRANSIT PLAN



## TRANSPORTATION SONOMA COUNTY GENERAL PLAN

SONOMA COUNTY,  
PLANNING DEPARTMENT  
PUBLIC WORKS DEPARTMENT  
JHK & ASSOCIATES,  
TRANSPORTATION PLANNING CONSULTANTS





## HIGHWAYS

### FUNCTIONAL CLASSIFICATION

As a means of defining the streets and highways as a circulation system, use has been made of a three-level functional classification scheme:

- . Principal Arterials
- . Arterials
- . Collectors

The purpose of the functional classifications is to provide a means of identifying different elements of the system in terms of their basic function. Some level of importance and hence design standard is implied in each, although such characteristics as the number of lanes and the amount of traffic carried will vary considerably within each classification.

The principal arterials are the main thoroughfares of the County. They form the backbone of the highway system and are generally of regional as well as countywide importance. The arterials have a similar function, although at a more localized level. In many cases they will provide direct access to activities, particularly in commercial areas. The collectors perform a localized function by connecting arterials and providing collector links between arterials and local streets.

### HIGHWAY IMPROVEMENTS

For the highway improvement plan, four categories of highway improvement are designated as follows:

1. Management - intersection improvements, including widening for turn lane provisions, signalization, etc.; pavement widening (without increasing the number of lanes), general traffic management, and reduction of side friction (parking, access driveway restrictions, etc.).



2. Minor Improvements - Pavement widening to increase the number of lanes (without significant additional right-of-way acquisition), intersection modifications involving major reconstruction, replacement of, or improvements to, existing structures, etc.
3. Major improvements - Roadway to be constructed along a new right-of-way acquisition, either new route or major widening, with modifications to adjoining streets to provide suitable intersections.
4. Upgrading - Resurfacing, shoulder widening, curvature reduction, and other improvements to increase safety and driving comfort.

The first three levels of improvements are in response to forecast capacity deficiencies. The fourth is in response to the need to continually improve safety and driving comfort on other links of the highway system.

Maintenance and reconstruction of structurally inadequate facilities is not addressed in the General Plan.

#### LONG RANGE HIGHWAY PLAN

Figures 2 through 4 show the highway plan with the designated functional classifications and the recommended improvements to be made over the next 25 years.

In developing the highway improvement plan, every effort was made to seek out improvements that maximize the use of existing facilities and existing rights-of-way. For example, apart from the presently planned new sections of Highway 101 in Cloverdale, the only freeway improvements contained in the plan are additional lanes on Highway 101.

To achieve a highway plan which is in keeping with the general scale and nature of Sonoma County, extensive use has been made of what are termed "Rural Thoroughfares." These will have two continuous lanes of traffic with special lanes for turning movements, extra wide shoulders for farm vehicles or bicycles, and special truck passing lanes on gradients. Their exact design configurations will vary with locality, but sensitive design can enable their scale and intrusion level to be kept to a minimum. Throughout this report, the designation "2R" means two-lane thoroughfare having those attributes defined above.

# CIRCULATION

FIGURE 2

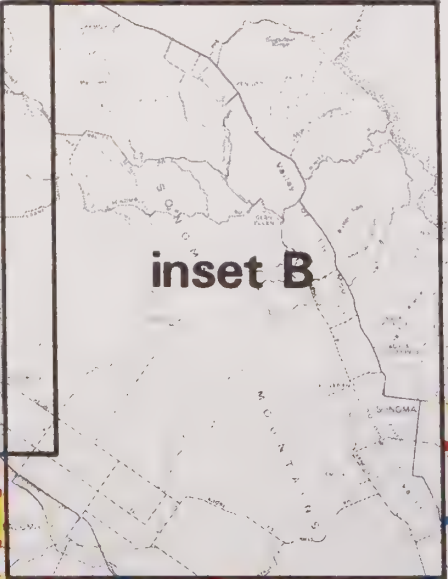
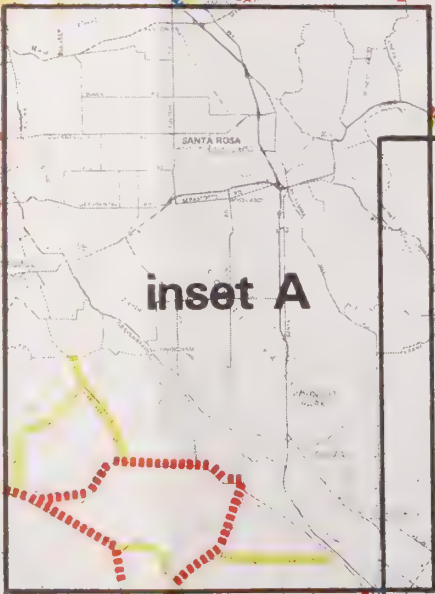
## HIGHWAY PLAN



### TRANSPORTATION SONOMA COUNTY GENERAL PLAN

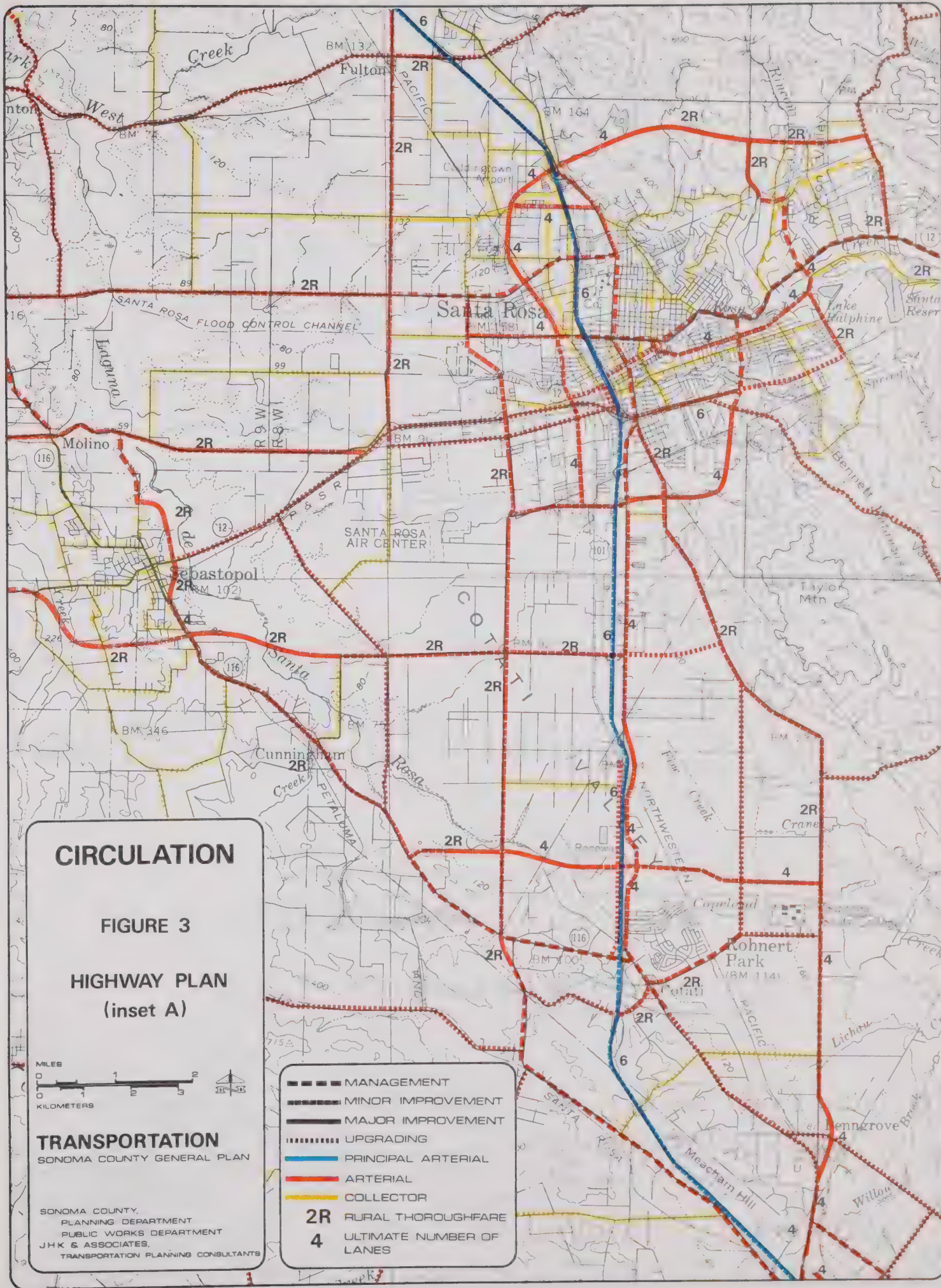
SONOMA COUNTY,  
PLANNING DEPARTMENT  
PUBLIC WORKS DEPARTMENT  
JHK & ASSOCIATES,  
TRANSPORTATION PLANNING CONSULTANTS

- MANAGEMENT
- MINOR IMPROVEMENT
- MAJOR IMPROVEMENT
- UPGRADING
- PRINCIPAL ARTERIAL
- ARTERIAL
- COLLECTOR
- 2R RURAL THOROUGHFARE
- 4 ULTIMATE NUMBER OF LANES









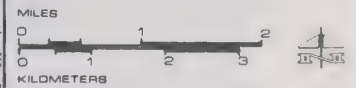




# CIRCULATION

FIGURE 4

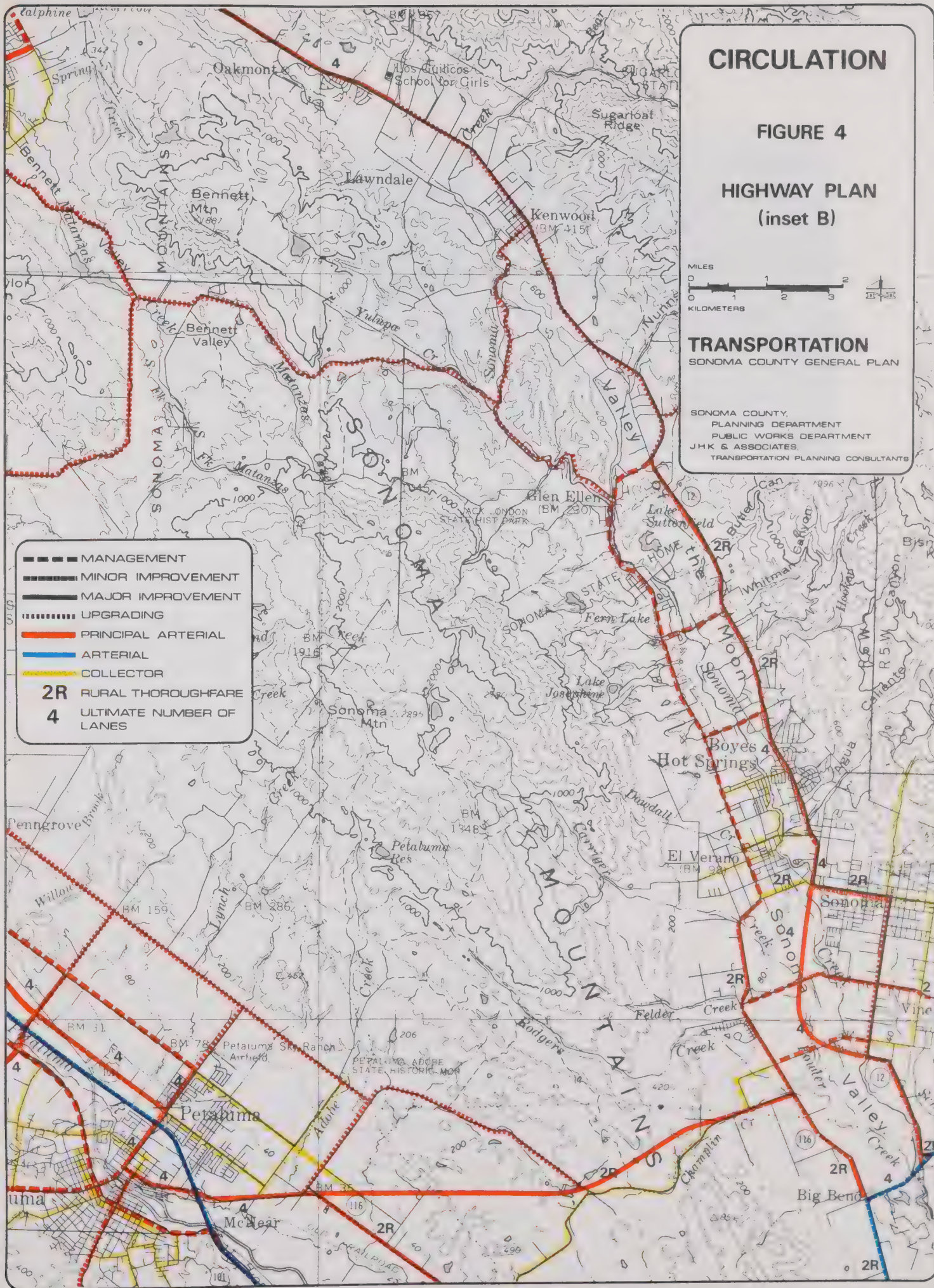
## HIGHWAY PLAN (inset B)



## TRANSPORTATION

SONOMA COUNTY GENERAL PLAN

SONOMA COUNTY,  
PLANNING DEPARTMENT  
PUBLIC WORKS DEPARTMENT  
JHK & ASSOCIATES,  
TRANSPORTATION PLANNING CONSULTANTS







## TRANSPORTATION IMPROVEMENTS FOR THE PLANNING AREAS

### COASTAL PLANNING AREA

This planning area encompasses the coastal margin and much of the Russian River area west of Duncans Mills and the southwestern or Southern Mendocino highlands between Occidental and Bodega.

The Planning Area is a region with transportation and planning issues unique to itself. The Sonoma Coast is a resource of regional and State significance and the quality of accessibility affects people both in Sonoma County and in the rest of the region. The limited road capability and fragile natural resources raise important planning issues in looking at future accessibility to the area.



The major coastal community within the planning area is Bodega Bay. The commercial fishing industry here is a large-scale operation and is an important economic base for the planning area and for the County. It has also been important in creating local community character, identity, and activity.

At the northern end of the planning area is the Sea Ranch second-home development, characterized by partial occupancy during the year. Some weekend travel is generated by this development but the overall impact on travel patterns is not expected to be significant, largely due to its remoteness from other centers of population.

Apart from travel in the community of Bodega Bay, the predominant travel pattern is access to and from the planning area. Weekends represent the highest travel peaks, these in turn showing substantial seasonal fluctuations.

The principal corridor in the planning area is Highway 1 and this splits into three main corridors providing access from Sonoma County and the rest of the region: Highway 116 (River Road), Bodega Highway, and Valley Ford Road. The critical area in terms of future capacity deficiencies is the section of Highway 1 through the community of Bodega Bay, although

weekend deficiencies will continue to extend along much of the coast.

The sensitivity of the natural resources makes transportation a key issue in this planning area. In general, transportation is only one of the many factors which influence the distribution of growth in Sonoma County; and in many cases a minor one compared to utility costs, geographic restraints, etc. The coastal area is, however, a dramatic exception to this. It has many of the desirable features of the rural residential opportunities in the Sebastopol and Russian River Planning Areas (different geographic features but similar lifestyle characteristics) and would experience extreme development pressure for primary rather than secondary homes if access times were substantially reduced.

The only significant highway improvement being recommended for this planning area is a Highway 1 bypass just east of the community of Bodega Bay. The remainder of Highway 1 is designated for traffic management improvements. Examples are turn lanes for parking areas, hard shoulders where parking occurs on other parts of the highway, and similar improvements which require only minor construction work. The emphasis is on improving safety and driving comfort rather than speed and capacity.

To provide transit access between the coast and the remainder of the County, a special coastal network service is proposed. This will serve Jenner and Bodega Bay via the Russian River. Operating on a flag stop basis, the route will serve both local residents and recreationists.

#### CLOVERDALE PLANNING AREA

The Cloverdale Planning Area encompasses the northeast and north central portions of Sonoma County. It can be generally described as the portion of the County north of Highway 128 on the east side of Highway 101 and north of Lytton Springs Road, Dry Creek Road, and Rockpile Road on the west side of 101. The area is typically mountainous except for the Alexander Knights and Dry Creek Valleys. These relatively narrow floodplains of the Russian River, Redwood Creek, and Dry Creek contain most of the area's population with the principal communities being Geyserville and the City of Cloverdale.



Recreational attractions have a significant impact on the travel activity in the Area. The northern Redwood Empire is a major generator of recreational trips Statewide. Of more specific concern, Fort Bragg, Lake Mendocino, and Clear Lake are all readily accessible from Cloverdale. There are several major attractions within the area, such as The Geysers and wineries. If built, the most important recreational travel attractor in the area would be Warm Springs Dam (Lake Sonoma). This single project could almost equal the coast or the Russian River as a weekend traffic generator.

The major deficiency predicted for this area is along the Highway 101 corridor -- particularly through Cloverdale. At the present time, Highway 101 is planned for full freeway construction around Cloverdale with implementation contingent on State funding. Access to Lake Sonoma will need special planning when future plans are more certain. At this stage no specific recommendations are made but it should be noted that present access capacity is insufficient for heavy recreational use of the proposed lake area.

Transit service for Cloverdale should consist of a local demand responsive type of operation to serve captive transit segments of the population augmented by a medium level of intercommunity service to Healdsburg, Santa Rosa and other centers of activity.

#### HEALDSBURG PLANNING AREA

The Healdsburg Planning Area lies south of the Cloverdale Planning Area and covers the remainder of the north central portion of the County. The City of Healdsburg is the major urban area and provides a nucleus of basic employment. There are several large gravel extraction operations on the Russian River near the community of Windsor, which result in significant truck activity in this area.

Recreation traffic affects the Healdsburg area in the form of through trips between other areas. There is some River-oriented activity near Healdsburg but the area in general does not attract recreation trips on the same scale as the Russian River or Coastal Planning Areas.

The dominant transportation facility in the Healdsburg Planning Area is Highway 101. There are no major east-west facilities. Most of the population lies within a three-mile strip centered about the freeway, where the prevailing circulation, even for short trips, is via the freeway with local east-west collectors providing access to and from the freeway. Within Healdsburg itself, Healdsburg Avenue is a major arterial providing north-south circulation.

The transportation plan calls for increased access capacity into and within the central area of the City of Healdsburg. This is to serve the increased growth in commercial activity planned for in the Land Use Plan. The recommended transit service is for local demand responsive type of operation to serve captive transit segments of the population and intercommunity to Cloverdale, Santa Rosa and other centers.

In the southern part of this planning area, the only major improvement is the extension at Shiloh Road, west to Eastside Road. This extension will provide access to Highway 101, avoiding the need for traffic in the southwest part of the planning area (particularly trucks) to pass through the center of Windsor.

#### RUSSIAN RIVER PLANNING AREA

The River area offers a unique situation with clusters of population located at relatively high densities in an appealing natural environment. As a resort area recreational uses today tend toward camping and hiking, rather than rented vacation homes as in the past. Recreation activities, however, still provide a substantial part of the economic support for the area. Guerneville is the major community along the River, with the community of Forestville located a few miles to the south.

Future travel patterns in this area will depend on the type of growth which the area experiences. The transition to year-round residential communities is already changing travel patterns to a more commuter-oriented type of travel.

In the highway improvement plan, Highway 116 is designated for traffic management from Monte Rio to Guerneville and from Forestville to Guerneville Road. River Road-Mirabel Road from Guerneville to Highway 116 is also recommended for traffic management. With the increase in traffic volumes in Forestville, a bypass is proposed to enable the community to preserve the rural character of its commercial center.

As discussed under the Coastal Planning area, a special transit network is recommended to serve the Russian River and the coast. It should operate under flagstop service and provide access to the major centers of the County.

A local demand responsive type of service is also recommended to serve the captive transit segments of the population.

#### SEBASTOPOL PLANNING AREA

The Sebastopol Planning Area includes the City of Sebastopol and several small communities such as Graton, Bloomfield, and Valley Ford. The area is predominantly agricultural with dairies in the southern parts of the Planning Area and apple orchards to the north. West Sebastopol is a mixture of rural residential and orchard land. A large percentage of the planning area population lives in a rural rather than an urban environment.

The Planning Area itself is a recreational attraction and it serves as a gateway to many of the other recreational areas such as Bodega Bay and the Russian River. The predominant travel characteristics are the widely dispersed trip patterns that arise from the high proportion of rural residential population. These are predicted to cause severe deficiencies on sections of Highway 12 and Highway 116. Both of these highways pass through the City of Sebastopol with the result that low capacity streets are forced to carry ever-increasing volumes of through traffic. The problem is even more acute for weekend travel.

The transportation alternatives that were considered for this Planning Area were all concerned with carrying traffic around Sebastopol. The final transportation plan evolved from considerations of community impacts and the plan provides both east-west and north-south bypass capability. To reduce impacts to a minimum, emphasis is given to the use of existing facilities and to the placement of new facilities in the least sensitive locations.



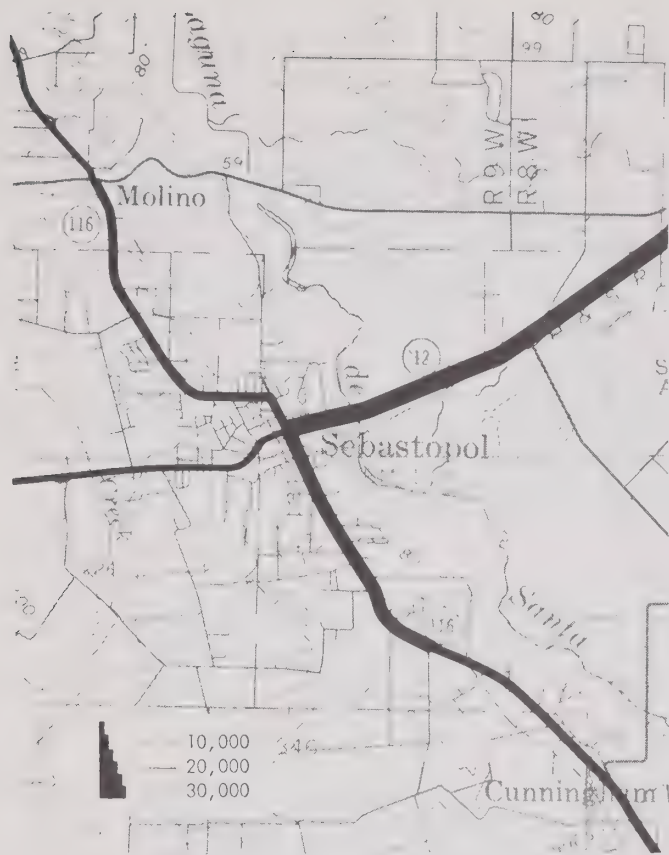
Figure 5 shows the traffic demand for the year 2000, the capacity deficiencies which would arise if this traffic demand is applied to the existing highway system, the basic concept behind the circulation plan, and the resulting traffic volumes. The key features of the plan are as follows:

1. Improve Occidental Road and provide a new extension to connect with Bodega Highway
2. Link Todd Road directly to Highway 116 and continue a westward extension to link up with Bodega Highway
3. Provide a north-south bypass just to the east of the City of Sebastopol

Under this plan, east-west traffic between Highway 12 and Bodega Highway will bypass north of Sebastopol along Occidental Road. Traffic between the rural residential area to the southwest of Sebastopol and Santa Rosa will use the Todd Road extension leaving only those travelers between the west part of Sebastopol and Santa Rosa on Highway 12 through the center of the City. With the addition of the north-south bypass, there will be virtually no through traffic in the center of Sebastopol.

The potential for transit in this planning area is limited due to the high proportion of rural-residential population and the resulting dispersed travel patterns. The long-range plan is for local service to be provided in Sebastopol (level L) with intercommunity service to Santa Rosa (M) and intercommunity service to Rohnert Park/Cotati (L).

FIGURE 5 SEBASTOPOL PLANNING AREA CIRCULATION



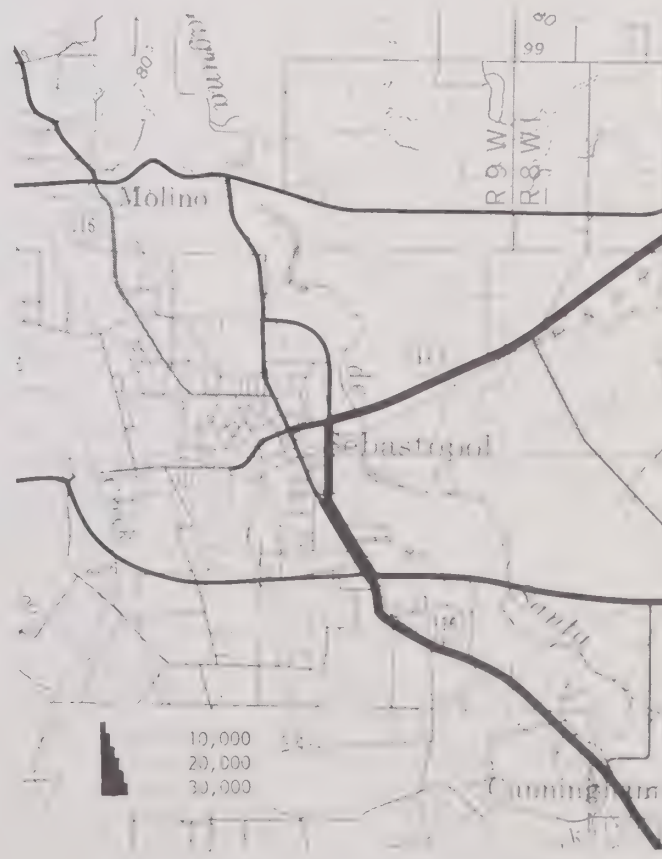
Baseline Traffic Demand - 2000



Baseline Capacity Deficiencies



Circulation Concept



Circulation Plan Traffic Volumes - 2000

## SANTA ROSA PLANNING AREA

The Santa Rosa Planning Area includes about 150 square miles of plain and hill country surrounding and including the City of Santa Rosa, the dominant population and economic influence in Sonoma County. Just north of Santa Rosa is the unincorporated community of Larkfield/Wikiup. Santa Rosa's relative isolation from the major population and economic centers of the San Francisco Bay Region has protected the City from the more rapid growth which has made such an impact on close-in urban areas. It is inevitable that Santa Rosa will be strongly involved in Bay Area growth pressures in the future, serving as a significant focus for urban growth.

The Planning Area is a net attractor of commuters, most of whom travel from the other parts of the County rather than from outside the County. Today approximately 8% of the planning area's work force commute to jobs outside Sonoma County.

The City of Santa Rosa has provided intracommunity transit services for many years and a continuing program of service extension has resulted in transit coverage over most of the City. Intercommunity service along the Highway 101 corridor is provided to Santa Rosa and other communities to the south by the Golden Gate Bridge, Highway, and Transportation District.

The travel patterns reflect the dominant role of the City of Santa Rosa as the major activity center in the County. They are centered along two major corridors: the north-south corridor of Highway 101 and the Highway 12 corridor running east from Highway 101 along the valley formed by Santa Rosa Creek. Downtown Santa Rosa is just northeast of where these two major transportation corridors intersect and with the eastward growth of the City in recent years the east-west traffic movement has become one of the dominant traffic patterns. Neither of these corridors has sufficient capacity to carry the forecast traffic loads and the basic thrust of the alternative transportation improvement plans in the Santa Rosa Planning Area was to seek means of overcoming these deficiencies.

To the west of the City the traffic patterns are less concentrated into specific corridors and the various parallel facilities offered by the County road system create a relatively well-dispersed east-west travel pattern.

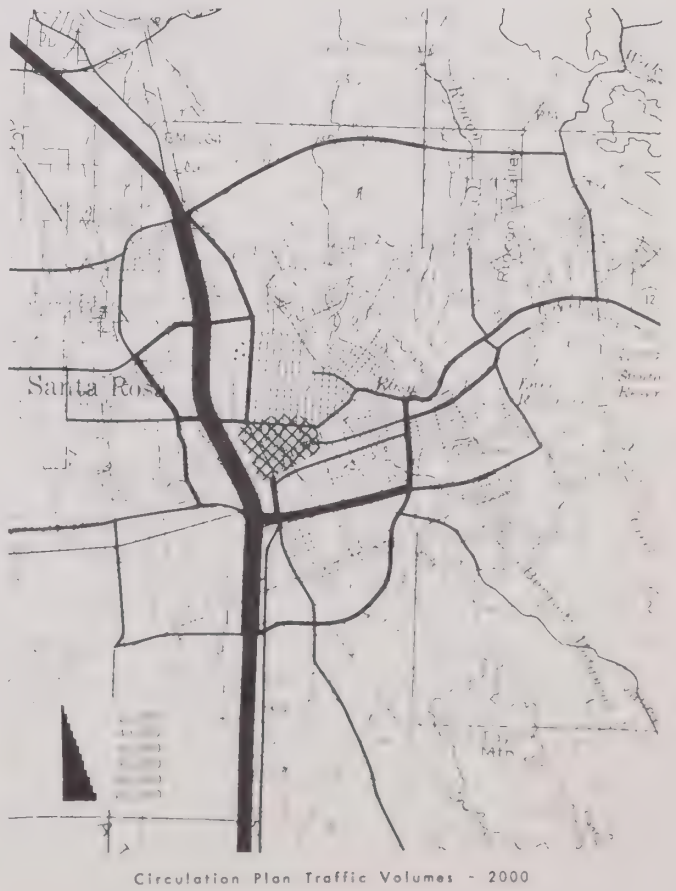
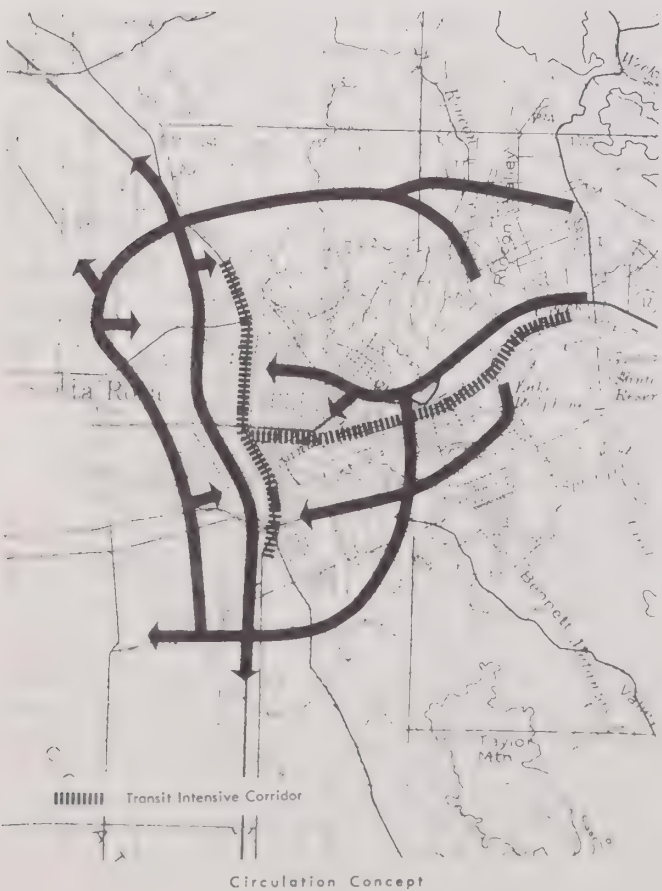
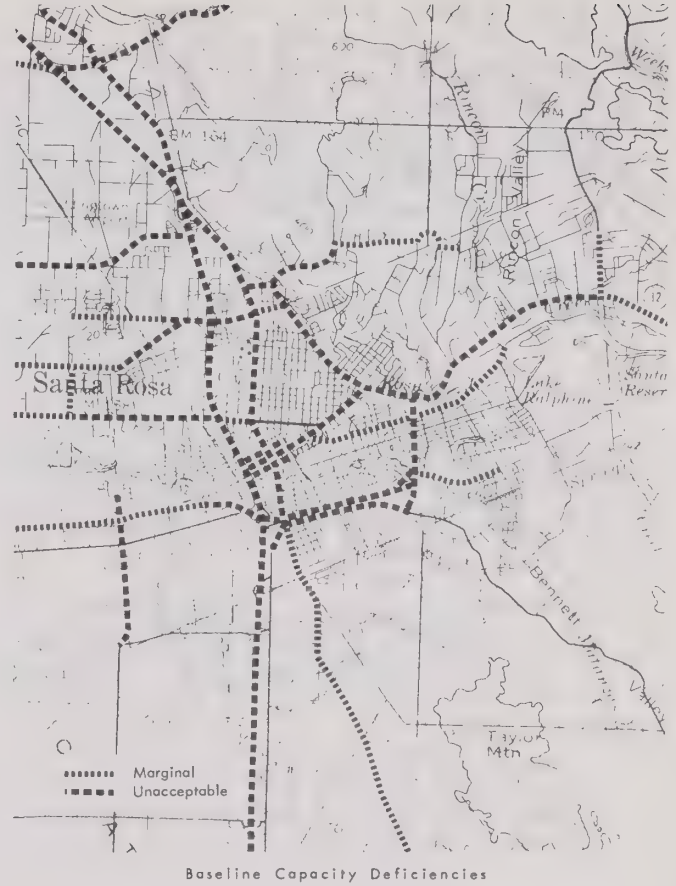


Five alternatives were examined for the Santa Rosa Planning Area, each of which reflected different means of overcoming the deficiencies and serving the forecast traffic volumes. They varied from making maximum use of freeways (eight lanes on Highway 101 and completion of Highway 12 to Oakmont) to developing specific local streets as major distributors. The final plan was selected after evaluating the transportation and environmental impacts of the various alternatives.

Figure 6 shows the traffic demand for the year 2000, the resulting deficiencies if this demand is applied to the existing highway system, the basic concept behind the recommended circulation plan and the resulting traffic volumes. The key features of the plan are as follows:

- Upgrade Highway 101 to six lanes with special devices such as ramp metering and merge lanes to maintain reasonable levels of service.
- Develop a continuous north-south distributor west of the freeway along the Coffey Lane-Dutton Road alignment. This would connect with Highway 101 at a reconstructed Mendocino Avenue interchange.
- Develop a major arterial north of the City running from the reconstructed Mendocino Avenue interchange to Badger Road (with access to Mission Blvd.) and from there by a further extension to Calistoga Road (similar in concept to the Fountain Grove Expressway).
- Extend Farmers Lane south and then west to link up with Hearn Avenue (with a reconstructed interchange at Highway 101).
- Construct Highway 12 as an at-grade boulevard between South E Street and Farmers Lane linking directly with Hoen Avenue.
- Develop transit intensive corridors along Mendocino Avenue, the Dutton Road-Coffey Lane distributor, and along the east-west corridor of Sebastopol Road-Montgomery Avenue.

FIGURE 6 SANTA ROSA PLANNING AREA CIRCULATION



The major new circulation element introduced by this plan is a continuous arterial from Calistoga Road across the north part of the City (the Fountain Grove Expressway) crossing Highway 101 with a new interchange at Mendocino Avenue, then continuing south along Coffey Lane and Dutton Avenue to Hearn Avenue. The function of the Fountain Grove Expressway portion is to provide access from the north-west and north-east areas of Santa Rosa to the major activity areas around Steele Lane and north Mendocino Avenue. The alternative to construct the Highway 12 freeway to Oakmont was not selected since it would place such a heavy traffic load on 101 that 101 would require at least eight lanes instead of the six lanes proposed in this transportation plan (eight lanes was judged unacceptable due to severe environmental impacts and greatly increased cost). Instead, the traffic from the east is dispersed between the various parallel routes, including the Fountain Grove Expressway and the Farmers Lane extension to Hearn Avenue.

The Coffey Lane-Dutton Avenue arterial relieves Highway 101 by providing a parallel north-south distributor for local trips. Traffic from the north and west can use this distributor for north-south movement instead of placing the burden on Highway 101.

The other new circulation element is the southerly extension of Farmers Lane to Highway 101 and Hearn Avenue. This will enable travel between the eastern part of the City and the industrial area to the south-west without the necessity of travelling through the downtown area or through the critical Highway 101-Highway 12 interchange.

The long-range transit plans have two components: intracommunity service with the development of high-intensity transit corridors on local streets within the City and express bus service to outlying communities. The transit plan recommends Mendocino Avenue-Santa Rosa Avenue as a major north-south transit corridor, with future improvement schemes providing special transit priority treatment to aid fast high-frequency service along this corridor. Similarly, for the Fountain Grove Expressway and Coffey Lane-Dutton Avenue corridor, although this should be more oriented to express type transit. The other major transit intensive corridor is Montgomery Drive. This corridor must play a major role in diverting the high traffic demands between the eastern part of the City and the CBD. The plan calls for these corridors to



become the basic transit infrastructure for the area and serve as the nucleus for the services which will extend out into the suburban areas and also for the location of future high-density residential development.

Express type of service should be oriented to inter-community service with park-and-ride type of operation where feasible (Oakmont for example). To speed bus service in the 101 corridor it is recommended that bus priority treatment be incorporated into the freeway metering operation.

#### ROHNERT PARK-COTATI PLANNING AREA

The Rohnert Park-Cotati Planning Area lies almost entirely within the south-central portion of the Santa Rosa Plain, midway between Petaluma and Santa Rosa. The area is bounded on the south and west by Stony Point Road, on the east by the Sonoma Mountains, and on the north by Wilfred and Mountain View Avenue. The principal urbanized areas are the Cities of Rohnert Park and Cotati and the community of Penngrove.

Land use in the area is typically urban, with a considerable amount of rural residential population in the southern half of the area. Agriculture, particularly forage crops, remains in the outlying portions, away from the Highway 101 corridor. The area relies heavily on employment in other places in the County, particularly Santa Rosa. At present about 25 percent of the employed residents in the area work outside Sonoma County.

The California State College, Sonoma, is located in this planning area. The presence of this large traffic generator creates substantial impacts on the circulation system east of 101, particularly in Cotati. Traffic volumes on most of the major access routes are considerably greater than would normally be expected for communities the size of Cotati or Rohnert Park.

Recreational attractions in west and north Sonoma County are important for this area because of the high number of through trips generated on the major travel routes. Both Highways 101 and 116 will be subject to substantial weekend capacity deficiencies.

The dominant transportation system elements in the Rohnert Park-Cotati Planning Area are Highways 101 and 116. The principal local east-west access routes are East Cotati Avenue and Rohnert Park Expressway. Old Redwood Highway North, Stony Point Road, and Petaluma Hill Road provide alternative north-south routes to 101 at the fringes of the planning area.

The predominant travel movement is north-south through the area and the alternatives which were studied reflect two concepts:

1. accentuating traffic concentrations on 101 and improving it to meet total demand, or
2. providing north-south capacity on parallel routes.

The second of these was chosen for the transportation plan. While it rates about equally well with the first, it is more compatible with the recommended plans in the two adjacent planning areas (Santa Rosa to the north and Petaluma to the south).

Key elements of the recommended plan are as follows:

1. Improve Petaluma Hill Road to four lanes south of Rohnert Park Expressway.
2. Improve Stony Point Road to 2R standard.
3. Extend Rohnert Park Expressway west to Stony Point Road (four lanes) and then by an additional extension to Highway 116 (2R standard).
4. Improve Rohnert Park Expressway to four lanes between Highway 101 and Petaluma Hill Road.
5. Improve West Sierra Avenue to 2R status (two continuous through lanes) from the Hub to 101.

One of the critical transportation elements in this Planning Area is the Hub in Cotati. With the improvements to Petaluma Hill Road and Rohnert Park Expressway, the recommended plan is for traffic management improvements north-south through the Hub and minor improvements (2R type) east-west on E. Cotati and W. Sierra leading into the Hub. However, it should be emphasized that this assumes that the major access into the college is from the north off Rohnert Park Expressway. Present plans for circulation within the campus are uncertain but it is recommended that a major internal circulation link be developed to connect Rohnert Park Expressway to the parking areas south of the campus. Consideration should also be given to locating future parking areas in the north rather than in the south.

With the magnitude and density of the projected growth in the Rohnert Park-Cotati Planning Area, coupled with the large-scale activity centers such as the Hub and the Sonoma State College campus, a high level of intra-community transit service (level M or H) is considered feasible. Intercommunity service must be considered in terms of the total corridor and a high level of service to Santa Rosa and to areas south of the County line should be implemented. Service to other communities, such as Sebastopol, would be limited to a level (L) bus operation designed to serve captive users. Provision of satellite parking adjacent to nodes on the Highway 101 system could enhance linked trips.

The achievement of a high level of service for intercommunity trips along the 101 corridor is essential for keeping the level of required highway improvements on Highway 101 to six lanes. In addition, a high level corridor service coupled with feeder systems is important for reducing peak hour demands on the Rohnert Park Expressway and the Hub.

#### PETALUMA PLANNING AREA

The Petaluma Planning Area includes most of the area from Roblar Road south to Marin County and east to the Sonoma Mountains. The area includes a variety of land forms and southeast of the City of Petaluma the land use is primarily agriculture. East of Highway 101 the City of Petaluma is displacing agriculture in the flat terrain and west of the City the area is maintaining a mix of dairyland, livestock and rural residential population.

The predominant transportation system configuration in the Petaluma Planning Area is a series of essentially northwest-southeast facilities parallel to the Petaluma River. This parallel arrangement is supplemented by a number of radial facilities emanating from the center of West Petaluma.

The major element in the system is Highway 101. In the Petaluma area the freeway separates the older portion of the City, along with the railroad and old waterfront, from the primarily new, fast-growing, and predominantly residential area on the east side of the City. Provision of sufficient access to and across the freeway is a major concern in the circulation plan.



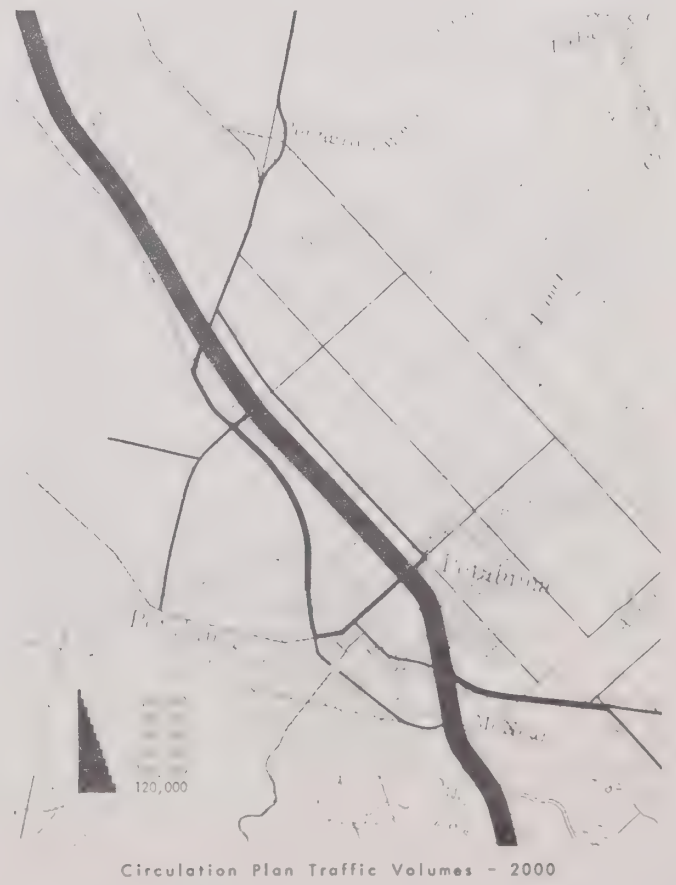
The Land Use Plan envisages Petaluma changing over a period of time to a less commuter oriented community. Thus while the projected population growth to the year 2000 is around the Countywide average, growth in employment is somewhat higher. The net result is a relative reduction in out-commuting and a slight increase in in-commuting (largely from Sonoma as is discussed below).

The major deficiencies forecast for this Planning Area are Highway 101 and the central area of Petaluma, particularly Petaluma Blvd. To relieve these deficiencies, the transportation plan has two principal concepts. One is to relieve Highway 101 by developing parallel capacity along McDowell Blvd. and Ely Road. The other is to provide a new access to the north from the west part of the City to channel Highway 101-bound traffic out of the central area.

Figure 7 shows the traffic demands for the year 2000, the deficiencies which would arise if these demands are applied to the present-day network, the basic circulation concept behind the plan, and the resulting traffic forecast. The key features of the plan are as follows:

1. Extend North McDowell Blvd. north to Old Redwood Highway North (four lanes).
2. Improve Ely Road to 2R standard.
3. Improve Skillman Lane to 2R standard and extend it directly westward to Bodega Avenue.
4. Extend Skillman Lane north of Petaluma Blvd. to a new interchange with Highway 101, aligning with Corona Road.
5. Create a new north-south link between Skillman Lane and Bodega Avenue (in the vicinity of Lohrman Lane and Marshall Avenue).
6. Develop Washington Street as a transit intensive corridor.
7. Provide a direct east-west connection between Lakeville Highway and Stage Gulch Road (Highway 116) and improve Stage Gulch Road.

FIGURE 7 PETALUMA PLANNING AREA CIRCULATION



The highway improvement plan for this area thus emphasizes bypassing Highway 101-bound traffic from the west side of Petaluma and providing only traffic management improvements around the downtown area on the west side of the river. The new east-west alignment of Highway 116 is a key link, since the Land Use Plan calls for increased employment opportunities in Petaluma with the result that there will be an increase in commuting from Sonoma to Petaluma at the expense of commuting from Sonoma to Santa Rosa. It will also divert traffic from Highway 12 in the Valley of the Moon.

The compact nature of central Petaluma encourages development of a high level of intracommunity transit service. Central Petaluma will serve as a focus for this service and as a center for intercommunity service to the north and south. Washington Street will play a major role by serving as a transit intensive corridor.

#### SONOMA VALLEY PLANNING AREA

The Sonoma Valley Planning Area encompasses the portion of the Sonoma Valley from north of Kenwood to Sears Point and Tubbs Island at the southern extremity of the County. The City of Sonoma provides an urban focus in the southern portion of the Valley while northward a number of small, primarily residential communities give way to agricultural lands. In addition to providing an attractive rural residential setting, the area has an abundance of recreational attributes.

The predominant transportation feature in the area is Highway 12, which runs the length of the Valley from Santa Rosa to Schellville, then easterly (with Highway 121) to Napa. South of Sonoma, Highway 121 extends southerly to Highway 37, the major east-west facility across the north end of San Pablo Bay, while Highway 116 runs westerly to Petaluma. Paralleling Highway 12 through much of the Valley is Arnold Drive, with Watmaugh Road, Leveroni Road, Petaluma Avenue, Verano Avenue, etc., forming a series of connections between the two.



The great majority of travel in the area is radially oriented to central Sonoma. However, there is also a significant component of trip activity between the rural residential areas in the north of the planning area and the City of Santa Rosa. These trips are concentrated along Highway 12. A third major travel pattern involves trips between the Sonoma and Petaluma urban areas. As discussed under the Petaluma Planning Area, travel between Sonoma and Petaluma is predicted to increase by the year 2000 under the recommended Land Use and Transportation Plan, due to more employment opportunities in Petaluma and increased accessibility between the two cities by improvements to Highway 116.

The alternative plans identified for the Sonoma Valley Planning Area were in nearly all cases based on the construction of new facilities to bypass trips around the central area of Sonoma. The alternative chosen for the Transportation Plan requires the minimum amount of new alignment to bypass central Sonoma. It basically provides a parallel route to Highway 12, leaving Broadway just south of Watmaugh Road and running north to Petaluma Avenue, where it rejoins the existing alignment. It also requires management-type improvements to the supporting road systems, as well as widening existing Highway 12 through a number of built-up areas.

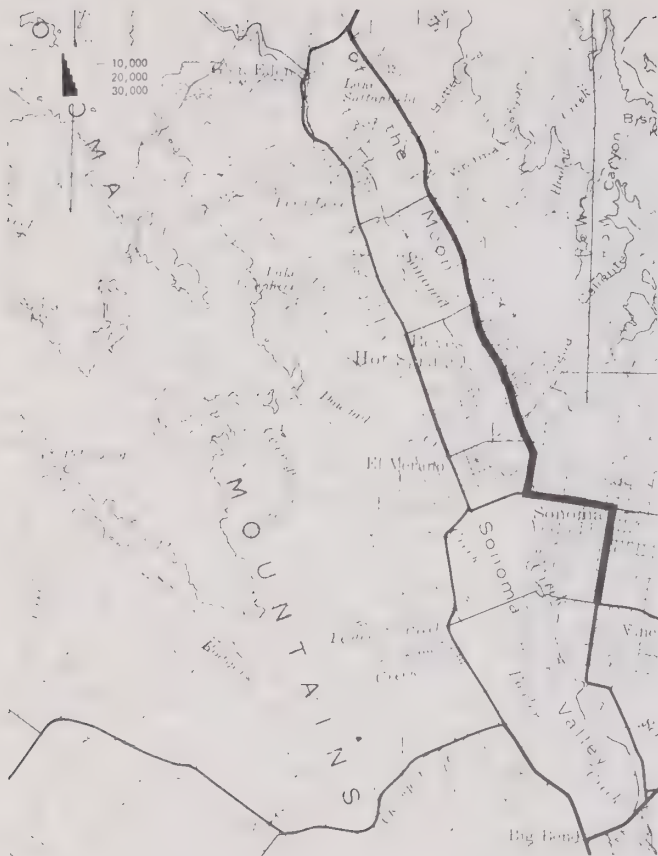
Figure 8 shows the estimated traffic demands for the year 2000, the capacity deficiencies which would arise if this demand were applied to the existing highway system, the basic concept behind the recommended plan and the resulting traffic volumes. The key features of the plan are as follows:

1. Improve Highway 12 to the 2R standard between Glen Ellen and Agua Caliente.
2. Improve Highway 12 to four lanes between Agua Caliente and Napa Street.
3. Continue Highway 12 south along a new alignment rejoining Highway 12 at the south end of Broadway (four lanes).
4. Improve Highway 121 to four lanes between Arnold Dr. (Highway 116) and the intersection with Highway 12.
5. Improve all of Highway 121 and 116 to 2R standards (except for the section of Highway 121 listed above).

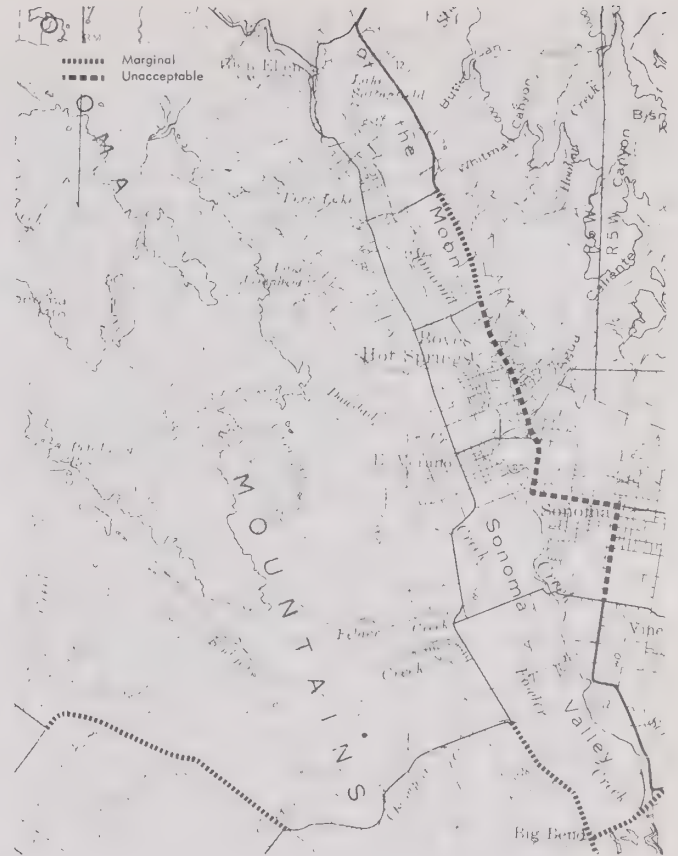
Both the Land Use Plan and the Transportation Plan call for only moderate growth in the Valley of the Moon. For example, two transportation alternatives which were rejected were the Highway 12 freeway between Highway 101 and Oakmont in Santa Rosa and a new alignment for Highway 12 along Sonoma Creek. This level of reconstruction would place considerably more emphasis on growth and traffic movement in the Valley of the Moon than the recommended plan. Highway 12 would need to be upgraded to four lanes along its full length to appropriately match the capacities of the improvements at either end; also, the westward improvement to Highway 116 would no longer be justified as a means of diverting traffic out of the Valley of the Moon. The goals and policies for Sonoma Valley indicate a strong desire to preserve its present character and the recommended Land Use and Transportation Plan was selected accordingly.

Transit in this Planning Area should consist of local service (level M) focussed on the Central Business District (CBD) of the City of Sonoma and intercommunity service to Santa Rosa and Petaluma.

FIGURE 8 SONOMA VALLEY PLANNING AREA CIRCULATION



Baseline Traffic Demand - 2000



Baseline Capacity Deficiencies



Circulation Concept



Circulation Plan Traffic Volumes - 2000



## IMPLEMENTATION

### INTRODUCTION

Implementation of the Transportation Plan involves a continuing program of capital investment in transportation improvements, supported by a commitment to the policies defined in the transportation goals. In this section of the report the capital improvement programs for highway and transit are summarized; financing sources are discussed, and the recommended transportation strategies and policies are presented.

### THE REGIONAL CONTEXT

While the Transportation Plan is specifically designed to fulfill Sonoma County's Transportation Goals, the influence of the surrounding region has been considered throughout the plan development work. Sonoma County is one of the nine Bay Area Counties and as such is responsible to the Metropolitan Transportation Commission (MTC) for expenditure of State Transportation Development Act or Federal funds on transportation. MTC's Transportation Plan for the Bay Area is a broad based policy-oriented presentation of issues, and sets out general priorities for transportation improvements.

The main corridor of regional significance in Sonoma County which is cited in the MTC report is Highway 101. The critical nature of this corridor and the extent of its relationship to Marin County and San Francisco was seen clearly in developing the Sonoma County Transportation Plan. The travel demand at the southern boundary of the County arising from a continuation of present commuting trends would be inconsistent with assumptions being made by Marin County and MTC. The commitment to a Community Centered Land Use concept and a continuing policy to encourage less commuting in this corridor will be necessary to keep the demand to the level forecast for the Transportation Plan.

The Sonoma County Transportation Plan's recommendations for encouraging high levels of transit usage in the Highway 101 corridor is in keeping with the policies of Marin County and MTC. Long-range plans call for a continuing program of increased transit service in the Golden Gate Corridor and the type of transit strategies discussed in the Sonoma County Plan will support this. At the same time, however, considerable emphasis needs to be placed on orienting these improvements to intracounty commuters as well as those commuting to Marin and San Francisco.

As a popular Bay Area recreational area, Sonoma County will continue to experience high weekend travel demands from outside the County. Even with the recommended highway improvement, weekend peaks will exceed the capacity of many parts of the system as weekend traffic increases. The future development of recreational areas must therefore be undertaken at a scale which balances the needs for recreational opportunities against the problems of accessibility.



## TRANSIT

Since Sonoma County does not presently have a county-wide transit system, the initial efforts will be to implement a basic system. With continual monitoring and improvement this will then be expanded progressively to provide a system which can meet the long-term goals of the Transportation Plan.

The key points of the short-range transit program are as follows:

Intercommunity Transit - The recommended intercity transit service has two components, as shown below.



Short-term recommendations are for daily service (six days per week) with variable headways on the basic system, and periodic service on coastal recreational loop during the peak periods only (summer weekend days). The system will consist of 12 buses and operate at an annual deficit of \$345,000 (assuming an average 25¢ fare).

Intracommunity Transit - the short-term recommendations for intracommunity transit are as follows:

Santa Rosa	- Fixed route, fixed schedule service 7 days a week with supplemental Delay Dial-a-Ride
Petaluma	- Fixed route, fixed schedule service 5 days a week with supplemental Delay Dial-a-Ride
Cloverdale	- Rover Dial-a-Ride 2 days a week
Healdsburg	- Rover Dial-a-Ride 2 days a week
Windsor	- Rover Dial-a-Ride 1 day a week
Rohnert Park/ Cotati	- Rover Dial-a-Ride 3 days a week
Sonoma	- Rover Dial-a-Ride 3 days a week
Sebastopol	- Rover Dial-a-Ride 2 days a week
Guerneville	- Rover Dial-a-Ride 2 days a week

This system will require 28 buses and, assuming an average 25¢ fare, will have an annual operating deficit of \$780,000.

Special Service for Handicapped Persons - the recommendation is for 25 percent of the vehicles in the intracommunity and intercommunity systems to be equipped to accommodate the handicapped. Additional special travel needs would then be met by having separate advance reservation dial-a-ride systems in and between each of the identified urban areas in the County. This service would be operated by a non-profit social service agency, the Volunteer Bureau of Sonoma County, under contract to the Transit District. The service is based on separate routes radiating from Santa Rosa along the major travel corridors in the County (Cloverdale, Guerneville, Petaluma, Sonoma). Features of the system are as follows:



### Intracommunity

- . Each route operates two to three days per week in concert with intercommunity routes to serve as a feeder system in addition to local trips.
- . Santa Rosa service operates five days per week.
- . If private autos are not used, a minimum of seven specially equipped van-type vehicles would be required for maximum flexibility (i.e., one vehicle per service area). Vehicle requirements vary by the day of the week, however, maximum utilization would be 4 vehicles in Santa Rosa area and 1 vehicle in the other communities.

### Intercommunity

- . Each route operates two to three days per week depending upon demand.
- . Depending upon type of vehicle used, minimum of four mini-bus vehicles required for maximum flexibility in service (i.e., one vehicle per route).
- . The handicapped service would be provided free of charge to qualified patrons. Total annual operating costs of the system are estimated at \$154,000 of which \$85,000 would be for Transit District line haul service between communities. The non-profit service would cost \$69,000 assuming that volunteer drivers are used. If drivers are paid for the non-profit service the cost would increase by \$40,000 assuming wages of \$25 per day per driver.

Transit Management - The implementation and operation of an integrated county-wide transit system requires a central agency with taxing powers, legal authority and staff for administration. A countywide transit district formed under the State Public Utilities Code is recommended. The District should have separate tax zones which would allow the tax support to be related to the level of transit service provided. The mechanism to establish such a district - state legislative authorization and vote of county residents - will preclude its operation prior to 1977-78. As an interim measure a Joint Powers

Agreement could be exercised to begin the process of establishing transit service at an earlier date than could be obtained with a District.

### HIGHWAYS

Implementation of highway improvements in the County involves the jurisdictional responsibility of the State, County, and Cities. To identify the various responsibilities and set out a time schedule for the planned improvements, a special implementation program was developed which shows the time period (0-5 years, 5-15 years, 15-25) in which the improvement should be made, identifies the responsible jurisdiction, and provides an estimate of the cost. This is presented in the Phase A Technical Report of the Transportation Study.



### FINANCING

A summary of the estimated cost for implementing the Transportation Plan is given in Table I. Costs are shown in 1974 dollars and are based on unit costs applicable in Sonoma County at that time. Jurisdictional responsibility between County and Cities is based on estimated urban limits at the time of construction.

The estimated capital improvement costs for the highway improvement plan are \$225 million dollars of which \$145 million are for preventing or eliminating capacity deficiencies and \$80 million for general upgrading to improve safety and driving comfort. The estimated cost of implementing the long-range transit plan is \$170 million dollars over the 25-year period of which \$120 million is for operating subsidy. To these must be added an estimated \$210 million dollars in street and highway maintenance costs.

The last five years have been drastic changes in funding for transportation. Available highway monies have rapidly decreased and at the same time more money has become available for transit. The following is a summary of some of the major funding sources for transportation improvements.

#### Transit

- . Urban Mass Transportation Act of 1964 (amended 1970)
- . Urban Mass Transportation Act of 1974
- . Federal-Aid Highway Act of 1973
- . Federal Revenue-sharing Funds
- . Health, Education and Welfare Outreach Programs
- . Older Americans Act - Title III
- . State Transportation Development Act (SB 325)
- . City and County General Funds
- . Transit tax levied as a property tax or a sales and use tax

#### Highways

- . Gas tax apportionments from Highway Users Tax Fund
- . State Aid for Share of Road Projects
- . Federal Aid for Share of Road Projects
- . Local Road Taxes
- . Bonds
- . Sales Tax



TABLE I  
SUMMARY OF COSTS\*

HIGHWAY				
	State	County	City	Total
1. Recommended Improvements 1976-1980	18.5	5.1	12.9	36.5
1980-1990	54.3	13.7	26.0	94.0
1990-2000	2.2	4.8	7.5	14.5
Sub-Total	75.0	23.6	46.4	145.0
2. Upgrading 1976-2000	3.0	60.0	17.0	80.0
3. Maintenance 1976-2000	74.0	70.0	66.0	210.0
TOTAL HIGHWAY	152.0	153.6	129.4	435.0
TRANSIT				
	Capital Costs	Operating Costs	Operating Revenue	Operating Deficit
1976-80	1.5	7.7	1.1	6.6
1980-90	6.0	55.0	12.0	43.0
1990-2000	9.0	91.0	20.0	71.0
TOTAL	16.5	153.7	33.1	120.6

\*Amounts shown in millions of dollars using 1974 as a base.

Around 70 percent of the funds for the highway maintenance and improvements are from State and Federal gasoline taxes. Recent years have shown an accelerated trend in which the amount of dollars from this funding source is increasing much more slowly than inflation costs. The extent to which highway improvements can be financed is therefore rapidly diminishing. It has been estimated by the State Department of Transportation that by 1980 available highway monies throughout the State may do little more than cover maintenance costs.

The current rate of expenditure on highways in Sonoma County would provide \$550 million over the 25-year planning period versus a total estimated cost of implementing the highway plan (including maintenance) of \$435 million in present-day dollars. However, if the present trends continue, and inflation costs increase faster than gas tax revenues, this apparent excess of revenue over costs will not in fact be realized and in all probability, costs will exceed revenues.

The future funding availability for highway improvements in the County is difficult to assess at this time. The California Statewide Transportation Plan prepared earlier this year identified a large Statewide revenue gap between projected needs and projected funding capability. Studies are underway to examine the whole question of highway funding, and legislative changes will undoubtedly occur in the future.

The major source of transit funds are the Urban Mass Transportation Act and the State Transportation Development Act (SB 325).

Both of these funding sources can be used for operating and capital expenditures. The SB 325 funds are provided from State sales tax revenues and approximately \$2,000,000 per year is available to Sonoma County. Until 1976 these funds were used for funding highway improvements and Golden Gate Transit service. However, upon a determination by the County that there are



unmet transit needs they must be expended on fulfilling the transit needs. A condition of use of these funds, imposed by the Metropolitan Transportation Commission, requires that these monies be employed using a formula of 25% local money (excluding fare revenues) and 75% SB 325 funds.

The Urban Mass Transportation Act provides funds for transit operations in Urbanized Areas. While these funds are currently not available to fund transit operations in non-urbanized areas, transit services in the Santa Rosa Urbanized Area (including Rohnert Park/Cotati) would qualify for assistance.\* The use of these funds are limited to not more than 50% of the cost of operations. The estimated monies available under this Act will be between \$300,000 and \$400,000 annually during the period 1975-80.

There will be competing claims for both the SB 325 and UMTA funds by the newly formed County Transit District and the Golden Gate Bridge, Highway and Transportation District. While precise estimates of the division of funds between the two agencies is not possible at this time, it is anticipated on the basis of patronage at least 80% of the funds should accrue to the County Transit District.

Local sources of revenue will need to generate approximately \$0.15 to \$0.20 per dollar of annual systems cost. This translates to approximately \$400,000 to \$500,000 per year in the first 5 years of the transit program and rising to around \$5,000,000 by the year 2000. The initial system will cost Sonoma County residents approximately \$2 per person or about 0.6 mills on the tax base with an increase to about \$11.00 per person as the full transit plan is implemented.

#### TRANSPORTATION POLICIES AND STRATEGIES

Most of the policies specified in the Transportation Goals are embodied in the Transportation Plan. Implementation of the Plan will insure implementation of the policies. However, some of the policies are not explicitly represented in the Plan yet provide definite policy directives relating to

\*Legislation is currently pending in the Congress to extend the use of these funds to rural areas.



transportation in the County. In addition, some of the transportation strategies inherent in the Plan need to be stated so that they, too, can provide a basis for policy determinations during the plan implementation period.

This section, therefore, sets out the recommended policies and strategies which support the Transportation Plan. As such they are an important part of the total circulation element of the General Plan. The various recommendations are grouped under the three headings; mobility, community and environment, since these three areas of concern provide a central theme to the Transportation Plan.

#### Mobility

1. Keep abreast of technology with regard to new modes of transportation with the purpose of upgrading present systems (Goal D, Policy Number 2).
2. Design and develop transportation routes to accentuate, wherever practicable, planned transit systems, bikeways, equestrian trails and pedestrian facilities as well as automobiles and trucks (Goal D, Policy Number 3).
3. Develop a coordinated plan for encouraging staggered or flexible work hours. The plan should take into account specific traffic congestion areas and set out alternate strategies which major traffic generators can implement.
4. Develop incentive plans for encouraging car pooling.
5. As highway or transit improvements are made, look for opportunities to increase transit use such as park 'n ride facilities, shopper shuttles, recreational transit services, etc.
6. Develop parking and circulation management plans for the major CBD's which will direct vehicle travel so as to maximize use of the surrounding street system. Examples are auto-free zones, closing of certain streets to vehicular or through traffic, differential pricing for parking areas to encourage specific patterns of usage (e.g., all day versus short-term parking).

7. Develop a continuous program of transit system monitoring so that service identification and system upgrading can be regularly made in a manner which is responsive to local needs.
8. Initiate a comprehensive marketing program aimed primarily at transit use, but also at related transportation strategies, such as parking management and auto usage.

#### Community

1. Assure that the transportation system is designed to minimize social and economic disruption to communities and neighborhoods (Goal F, Policy Number 4).
2. Discourage land use activities that are inconsistent with functional uses of transportation facilities, e.g., residential properties fronting on arterial highways, and inadequate access to public transportation on the arterial for pedestrians (Goal G, Policy Number 5).
3. Encourage cities and other major communities to develop urban design plans for their CBD's which emphasize the community-centered land use plan and provide for pedestrian facilities and transit terminals.
4. Encourage urbanized areas to structure higher density residential areas in relationship to the transit system, particularly in transit intensive corridors.
5. Organize comprehensive community information programs to insure that all citizens are adequately informed of transit service availability and how it can be used.

#### Environment

1. Plan proposed transportation routes including major and secondary highways, bicycle and bridle paths to be compatible with natural processes and land forms (Goal H, Policy Number 1).

2. Treat landscaping as an integral part of transportation constructions and emphasize use of native trees and plants (Goal H, Policy Number 2).

#### TRANSPORTATION INFORMATION SYSTEM

The Sonoma County Transportation Study, which produced the Circulation Element, is based on and in turn has generated a significant amount of information, which forms the basis for the Sonoma County Transportation Information System. This system is an organized procedure for maintaining and utilizing the information developed in the countywide transportation planning process. The system provides a readily accessible source of historical data relevant to this process.

The segment of the transportation information system used for road and transit planning purposes contains transportation data and certain types of demographic, socio-economic, and land use data, organized into defined area units called traffic analysis zones. Two distinct types of data are associated with traffic zones:

1. Data referring to conditions within a zone, e.g., demographic and socio-economic information, total amount of travel demand, etc.
2. Data referring to the interrelationships between zones, e.g., the amount of travel between pairs of zones, the travel time, travel distance, and other interrelationships.

Within these two types, information is further classified by time (that is, base year, current year, and forecast years). The time separation also generally involves differences in the type of data. For example, most base year or current data is historical in nature whereas forecast year data consists of future estimates and projections.

Another type of data contained in the information system is the geographic and physical description of the transportation system in the County.

Traffic volume estimates, plan recommendations and other outputs result from the traffic zone and

transportation system input information; this procedure is known as transportation modeling, or the mathematical simulation and analysis of future conditions. Maintaining the information system in a current state is necessary to insure its usability. The County will not have the capability to use the transportation modeling procedure on its own computers but using outside resources is not difficult or expensive as long as the input information reflects the latest conditions and changes in the guiding policies of the Land Use and Circulation Plans.

Other aspects of the transportation information system are those which relate to noise impacts and air quality.

Inputs and products of the transportation modeling process are also the basis for the air quality and noise impact simulation models used in the General Plan Program. These simulation models are actually the products of other agencies. However, both models depend on information generated locally which must be maintained as part of the Information system to insure their usability.

The Transportation Information System provides the framework for maintaining, updating, and recalling information but a continuing County commitment of resources and personnel is necessary.



# NOISE

## INTRODUCTION

Noise is a rapidly growing concern in Sonoma County, and will become an increasing problem as areas of Sonoma County continue to urbanize. It surrounds us daily at home, at work, and at play. Loud music, the roar of automobiles, the vibrating interruption of trucks, or the weekend wood cutter's chain saw may be noise, depending on one's personal involvement with the activity.

People create noise in their daily routines. In the urban areas, where people live at higher densities and there is an increased level of activity, noise is a major concern. Noise has an accumulative effect as noise sources combine to form an ambient or background noise level which is constant and always present within the urban areas. In rural areas noise from a single chain saw, motorcycle, or piece of farm equipment will stand out sharply in contrast to the low background noise level.

Currently, when noise is a problem people contact the sheriff or city



police to complain. This is one alternative available to people who do not want to live in a noisy environment. It is not necessary to perpetuate or add to this condition because other alternatives do exist, either through planning or the use of mitigation techniques.

By including a Noise Element in the General Plan, an opportunity is provided to insure that land use and transportation planning are done with sensitivity to noise issues and concerns. Land use and transportation planning will help to avoid future noise problems by minimizing the number of people exposed to unacceptable noise levels or uncomfortable living situations. Noise evaluation is thus used as one tool in the analysis of land use and transportation alternatives and influences the selection of preferences.

The Noise Element is one of the nine elements of the General Plan required by State law. The Noise Element is a component of the Comprehensive Transportation Element of the General Plan. The Noise Element has direct relationships with the Land Use, Circulation, Housing, and Aviation Elements. The Element can also reinforce or make recommendations concerning noise issues in other Elements.

The primary goal of the Noise Element is to protect people of Sonoma County from the detrimental impacts of noise. This assures that when planning is done, the public comfort, health, welfare and safety is protected by having noise influence land use and transportation decisions.

Unwanted sound which does not provide information or pleasure is noise. It can cause loss of hearing, interrupt sleep, or provide an unbearable annoyance. Property values can be lowered and a community disrupted by noise.

Noise typically comes from transportation, community and industrial activities. Transportation noise consists of automobiles, trucks, motorcycles, and all motorized transportation vehicles. Community noise sources are those which occur in daily activities such as lawnmowers, vacuum cleaners, radios, and all

other people-oriented noise. Industrial noise includes construction and commercial noise in addition to noise generated from manufacturing plants.

Transportation Noise is the only problem of county-wide significance, although there may be other noise sources which could be identified at the community or neighborhood planning scale. Transportation Noise is the main focus of the Noise Element Technical Report. The major transportation noise source in Sonoma County is Highway 101, which has its highest vehicle activity through Santa Rosa. People living adjacent to Highway 101 are subjected to an unhealthy noise level during some periods of each day. Other existing transportation noise problems include residential development along Highway 12, west of Highway 101, and many rural roads where peak hour traffic creates a high noise situation on weekends as well as weekdays.

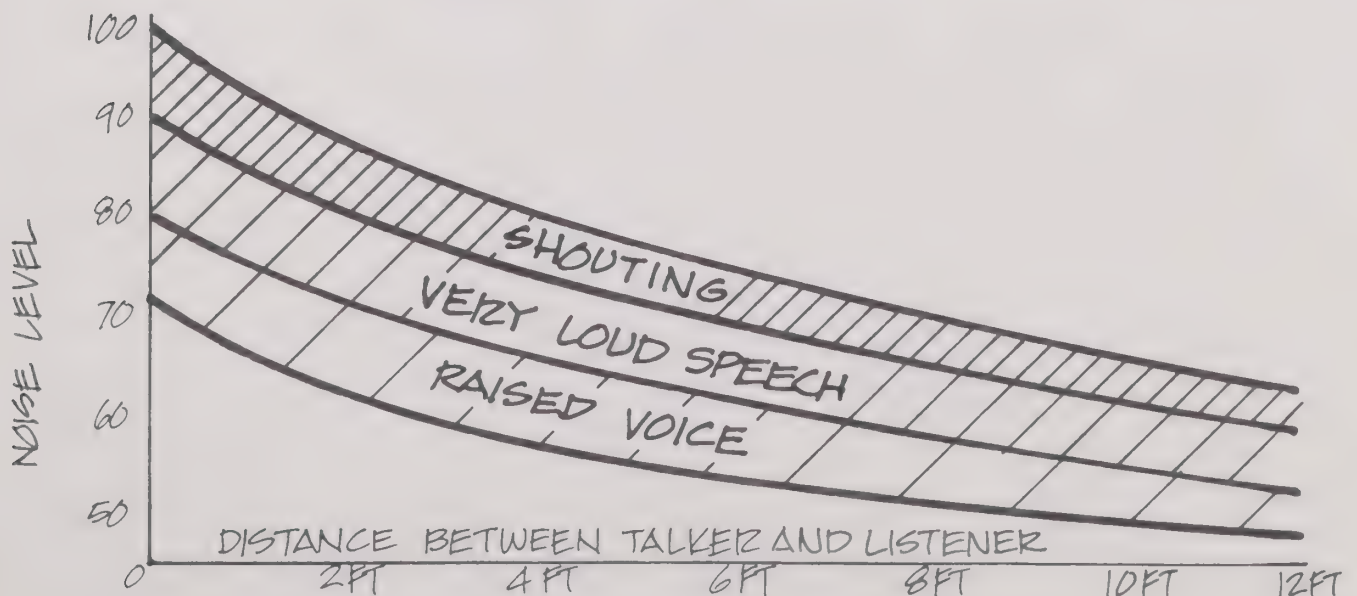
The human reaction to a noise increase (loudness) works in such a way that each increase of 10 decibels in sound level is perceived as approximately a doubling of loudness. The loudness of a heavy truck (90 decibels) for example, seems twice as loud as an alarm clock (80 decibels), but four times as loud as freeway traffic (70 decibels).

People respond differently to noise. Exhibit 1 demonstrates relative noise levels and generalized human response.

A noise ordinance, noise contours, and noise standards are all tools for implementation. A noise ordinance is oriented towards curbing community noise. Noise contours are used to identify transportation noise problem areas. Noise standards define land use compatibility in terms of noise sensitivity.

	NOISE LEVEL	RESPONSE	HEARING EFFECTS	CONVERSATIONAL RELATIONSHIPS
CARRIER DECK JET OPERATION	150			
	140	PAINFULLY LOUD		
	130	LIMIT AMPLIFIED SPEECH		
JET TAKEOFF (200')				
DISCOTHEQUE	120	MAXIMUM VOCAL EFFORT		
AUTO HORN - 3'				
RIVETING MACHINE	110			
JET TAKEOFF (2000')				
GARBAGE TRUCK	100	VERY ANNOYING		SHOUTING IN EAR
N.Y. SUBWAY STATION				
HEAVY TRUCK (50')	90	HEARING DAMAGE (8 HRS)		SHOUTING AT 2'
PNEUMATIC DRILL (50')				
ALARM CLOCK	80	ANNOYING		VERY LOUD CONVERSATION 2'
FREIGHT TRAIN (50')				
FREEWAY TRAFFIC (50')	70	TELEPHONE USE DIFFICULT		LOUD CONVERSATION
		INTRUSIVE		
AIR CONDITIONING UNIT (20')	60			LOUD CONVERSATION 2'
LIGHT AUTO TRAFFIC (100')	50	QUIET		NORMAL CONVERSATION
LIVING ROOM				
BEDROOM	40			
LIBRARY				
SOFT WHISPER (15')	30	VERY QUIET		
BROADCASTING STUDIO	20			
	10	JUST AUDIBLE		
	0	THRESHOLD OF HEARING		

EXHIBIT 1





## NOISE STANDARDS



Sleep, reading, relaxation, and recreation are activities which occur in residential areas and are easily interrupted by noise. These are types of activities which commonly occur in residential areas. Residential areas are considered noise sensitive land uses. Other noise-sensitive land uses include hospitals, schools, libraries, and selected professional offices. All of these land uses include activities

which are easily interrupted by noise. Because land uses differ greatly in their sensitivity to noise, varying standards by land use types are suggested. (see *Exhibit 2*). The Noise Element Technical Report, which supplements this summary, suggests noise standards which also include time of day, because nighttime noise is considered more disruptive in noise-sensitive areas.

## ACCEPTABLE NOISE LEVELS BY LAND USE

LAND USE CATEGORY	SOUND LEVELS (LDN) AND ACCEPTABILITY BY LAND USE						
	55	60	65	70	75	80	85
RESIDENTIAL - ALL TYPES							
SCHOOLS, LIBRARIES, HOSPITALS etc.							
COMMERCIAL							
INDUSTRIAL							
OUTDOOR RECREATION							



ACCEPTABLE NOISE LEVEL

NOISE MITIGATION REQUIRED

UNACCEPTABLE NOISE LEVELS

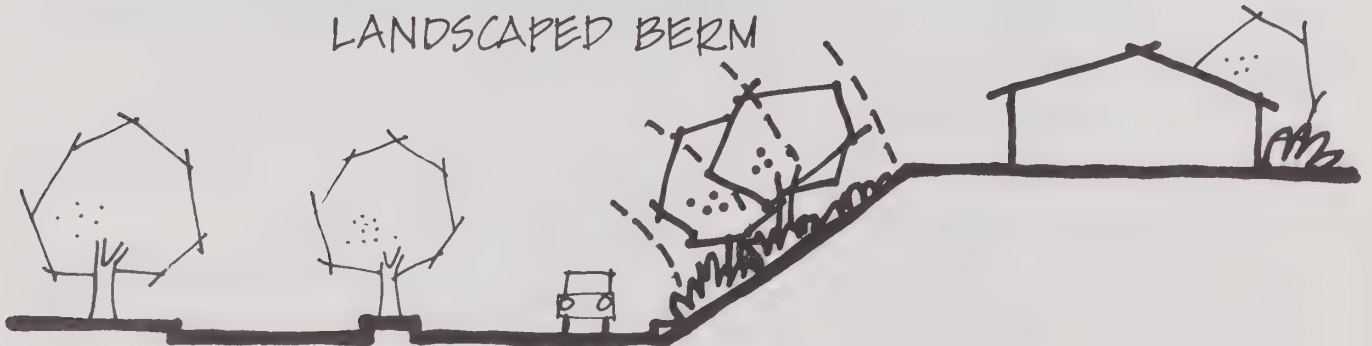
EXHIBIT 2



WALL



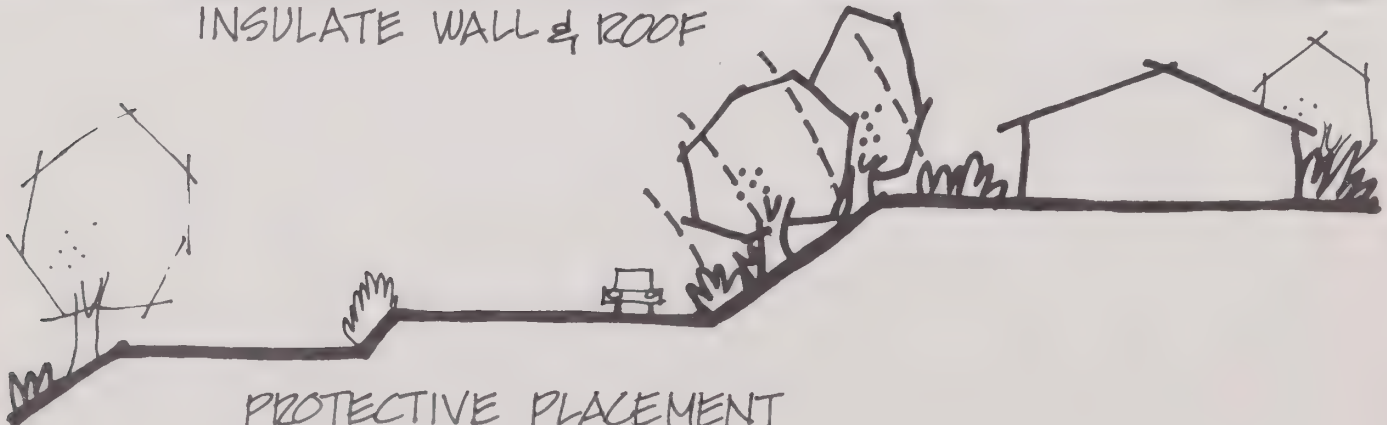
LANDSCAPED BERM



DEPRESSED ROADWAY



INSULATE WALL & ROOF



PROTECTIVE PLACEMENT

# COMPARATIVE NOISE MITIGATION TECHNIQUES

## EXHIBIT 3

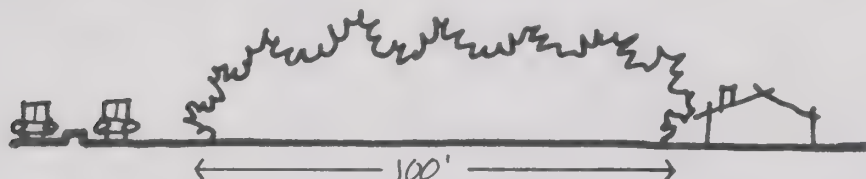
## NOISE MITIGATION

Mitigation of noise problems can be achieved through a variety of techniques. The need of each specific situation should determine the technique used. Walls, berms, insulation, and setbacks with landscaping are effective methods of solving noise problems. (See Exhibit 3)

The purpose of a noise barrier is to lower the noise to an acceptable level. Walls and berms are effective if tall and long enough to shield the receiver from the noise.

Landscaping alone offers little shielding from noise. Landscaping does not offer any of the physical properties required of an adequate sound shield. Plantings are porous to air flow, vibrate easily and lack density. Plantings do provide a psychological shielding of the noise, but virtually offer no acoustical benefit. (See Exhibit 4)

The best way of balancing effectiveness and aesthetics is to design a noise wall or berm in combination with landscaping.



A THICK GROWTH OF LEAFY TREES AND UNDERBRUSH REDUCES NOISE ABOUT 6 TO 7 db / 100 FT. (AVERAGE AUDIBLE FREQUENCY RANGE)

LOW FREQUENCY: LOSS-3-4 db  
HIGH FREQUENCY: LOSS-10-12 db



HIGH FREQUENCY REDUCTION 3-4 db  
SINGLE ROW OF TREES IS WORTHLESS AS NOISE BARRIER. DUE TO INTER-REFLECTION, MULTI-ROWS OF TREES ARE MORE EFFECTIVE.

EXHIBIT 4



## NOISE CONTOURS

The mapped expression of noise is a noise contour line. A contour line connects points of equal value. In this case, a contour line joins a series of points of equal noise. The contours will illustrate the distance from a road that a specified noise level exists. The noise contours are used to show areas of concern. Special consideration must be given to proposed land use changes within a 65 dB(A) contour line. The contour maps will be on display in the Building Inspection Department, Public Works Department, and Planning Department. The following Exhibit illustrates noise contours on a freeway interchange (*Exhibit 5*). A map showing areas of noise contours is also provided (*Exhibit 6*).

EXAMPLE OF NOISE CONTOURS

- PRESENT CONTOUR
- - - PROJECTED CONTOUR

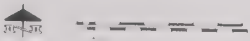


SOURCE: CALTRANS ENVIRONMENTAL PLANNING BRANCH

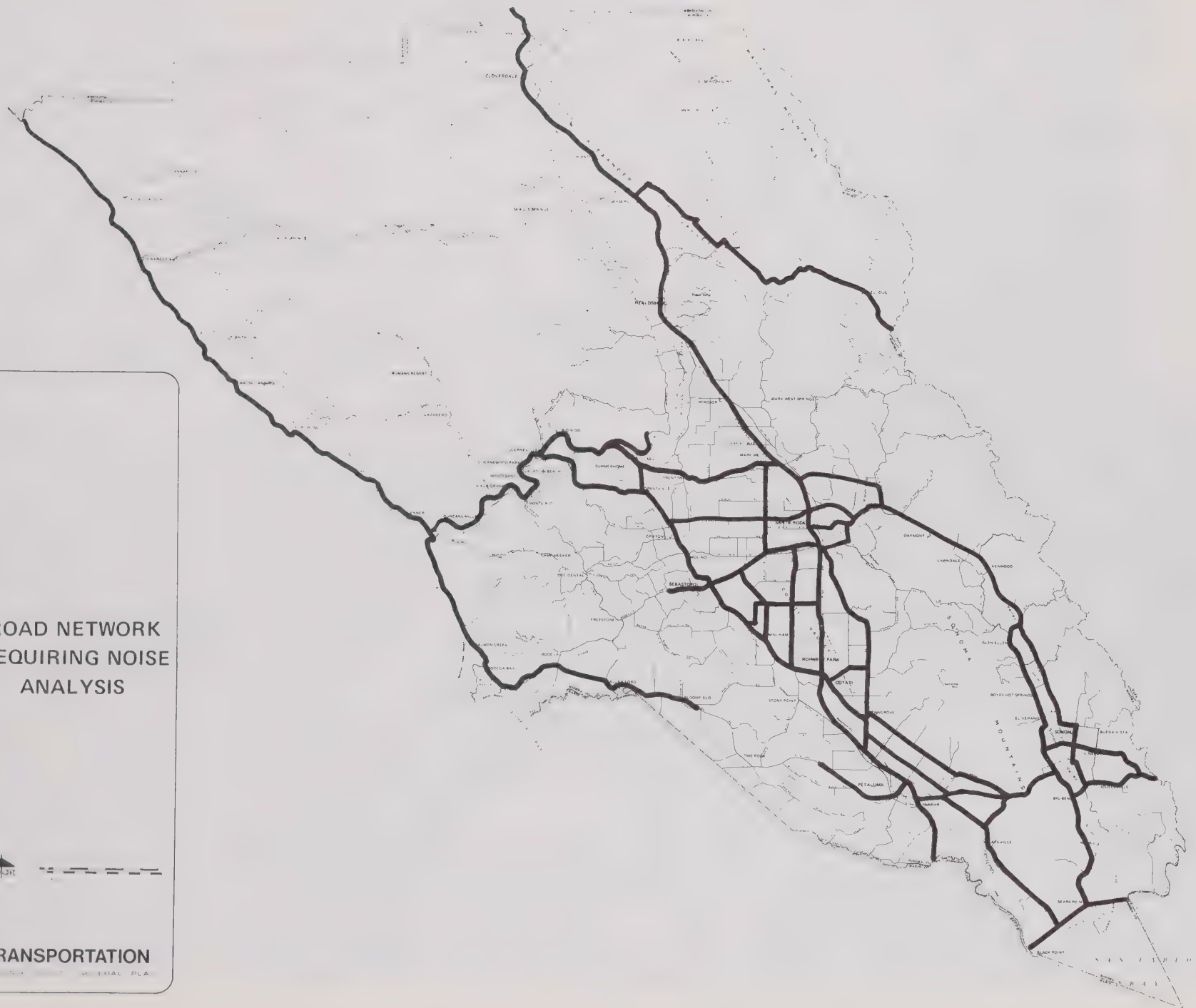




**ROAD NETWORK  
REQUIRING NOISE  
ANALYSIS**



**TRANSPORTATION**  
SOUTHERN CALIFORNIA REGIONAL PLANNING BOARD



## NOISE ORDINANCE

A noise ordinance provides the legal framework to implement noise standards. The suggested ordinance included in the Noise Element Technical Report is aimed at curbing community noise problems. It is intended to act as a guide for those writing a noise ordinance in the future. The County and Cities should adopt similar ordinances which address significant noise issues.



A noise ordinance is needed to complement other existing legal standards. The California Occupational Safety and Health Act covers industrial and construction noise sources to protect employees. The California Vehicle Code requires motorized vehicles to conform to specified noise standards. Neither of these standards address community noise problems or compatible land use standards. A noise ordinance will fill these gaps.

## GOALS AND POLICIES IMPLEMENTATION

The remainder of this summary is devoted to measures intended to implement General Plan goals and policies established for the Noise Element. The suggested measures are arranged in terms of the public agencies who should be responsible for their effectuation.

### *GOAL P*

*It shall be the Goal of Sonoma County to have the transportation system developed in a manner which minimizes air and noise pollution.*

*To this end, it shall be the policy of Sonoma County to:*

- 1. Evaluate the effects of air and noise pollution in transportation system plans and programs throughout the County to provide factual data for corrective action.*



2. *Establish or increase buffer areas to insure that residential, hospital, school and recreation areas are not subjected to excessive noise level.*
3. *Restrict development in noise zones established on the basis of decibel level.*

#### GOAL Q

*It shall be the Goal of Sonoma County to establish a noise standard which protects the public - health, welfare and safety.*

*To this end, it shall be the policy of Sonoma County to:*

1. *Forestall residential construction where ambient noise levels are clearly unacceptable for residential use.*
2. *Require noise mitigating measures when new residences are built in proximity to major transportation facilities.*

#### PLANNING DEPARTMENT

Noise should be considered in all residential development approvals because noise levels in excess of 65 dB(A) are potentially hazardous to the health and safety of residents in these areas. Noise avoidance or mitigating measures of any noise impacted area should be specifically addressed before approval of the development by the Environmental Protection Committee, Board of Zoning Adjustments, or Planning Commission. Such measures should be considered and applied to any proposed development where noise impacts are greater than 65 dB(A), which is in proximity to a major transportation facility, or which is adjacent to a high noise producing land use. Alternative land uses should be considered which are not impacted by high noise levels, such as commercial, industrial, agricultural and some types of recreation. The Planning Department will display noise contour maps illustrating areas of concern.



development where noise impacts are greater than 65 dB(A), which is in proximity to a major transportation facility, or which is adjacent to a high noise producing land use. Alternative land uses should be considered which are not impacted by high noise levels, such as commercial, industrial, agricultural and some types of recreation. The Planning Department will display noise contour maps illustrating areas of concern.

## BUILDING INSPECTOR

New multiple residential construction, including hotels and motels, must meet the State Noise Insulation Standards (Housing Law and Earthquake Protection, Title 25, Article 4). Single family detached houses should also meet these standards. It is the role of the Building Inspection Department, in plan review and site inspection, to implement standards set by the State of California, and the County of Sonoma. Therefore, the Building Inspection Department is responsible for enforcement of all noise standards in new construction. The Building Inspection Department will display Noise Contour maps which illustrate areas of concern.

## ENVIRONMENTAL HEALTH DIVISION OF THE PUBLIC HEALTH DEPARTMENT

The Environmental Health Division should determine if existing noise levels would be hazardous to the public health and safety of new residents. The Public Health Department should also evaluate noise producing land uses for their potential impact upon surrounding residents and enforce noise standards as specified in a Noise Ordinance.

## PUBLIC WORKS DEPARTMENT

Roadway design is an important factor in lowering transportation noise levels. Noise should be considered in all new construction or repair of county maintained roads.

## GOAL Q, POLICY 3

*Require Environmental Impact Reports to include existing ambient noise levels, expected construction noise levels, and proposed land use analyzed as a producer and receiver of noise.*

## PLANNING DEPARTMENT

The Environmental Protection Committee and Environmental Impact Report Division should require an Environmental Impact Report (E.I.R.) whenever noise is expected to be a significant issue. Noise references in an E.I.R. should address existing ambient conditions, estimates of construction noise levels, and estimates of post-project noise levels. The project should be reviewed as both a receiver and producer of noise

and analyzed in terms of the number of people impacted. Estimates will be based on established data on similar land uses. In all cases the report should address mitigation measures which will reduce any adverse impacts.

#### *GOAL R*

*It shall be the Goal of Sonoma County to encourage public agencies to lead the way in the mitigation of noise.*

*To this end, it shall be the policy of Sonoma County to:*

- 1. Promote further research in the mitigation of noise problems.*
- 2. Institute an education program which informs the general public about noise; its problems and solutions.*

#### BOARD OF SUPERVISORS

The Sonoma County Board of Supervisors should recognize noise as a significant issue and require further research and education programs.

### **STAFF RECOMMENDATIONS**

The Noise and Air Quality Sub-Committee of the General Plan Advisory Committee met on a regular basis and acquired technical knowledge of noise issues. The Sub-Committee developed Goals and Policies as a framework for the Noise Element. However, when the General Plan Advisory Committee met as a whole, several policies were omitted. At the technical level these policies and procedural recommendations are viewed as important; therefore, they are included as a staff recommendation to the Board of Supervisors.

#### *GOAL R, POLICY 1*

*Require governmental vehicles and equipment to conform to an acceptable noise standard.*

#### COUNTY GARAGE

The County Garage should keep all vehicles and equipment within the noise limits set by the California Vehicle Code and the County Noise Ordinance.

## GOAL R, POLICY 2

*Specify in all construction bids the use of equipment which conforms to an acceptable noise standard.*

### ALL COUNTY AGENCIES

All County Agencies which receive construction bids should require the bids to specify the type of equipment to be used and the noise emission level. The County Board of Supervisors should award construction bids to those who use equipment that conforms to an acceptable noise standard.

## GOAL R, POLICIES 5 AND 6

5. *Strictly enforce existing State and Federal noise standards for vehicles and buildings.*
6. *Support State and Federal legislation which is intended to lessen noise impacts.*

### BOARD OF SUPERVISORS

The Sonoma County Board of Supervisors should support state and Federal legislation which will reduce the detrimental impacts of noise and require all County Agencies to strictly enforce all noise measures.

## THE ACCOMMODATION OF NOISE

Land use planning must provide a means for alleviating the inherent conflict between loud industrial or recreational land uses and the noise sensitive land uses such as residential development. Incompatible land uses should not encroach upon each other or limit the activities within a neighboring land use. Existing land uses should determine compatibility. For example, residential development would not be a compatible land use adjacent to the Sonoma County Airport because of the safety and noise aspects. Residential land uses surrounding the airport would ultimately limit the airport's activity. Conversely, high noise producing land uses should not locate adjacent to noise sensitive land uses. High noise producing land uses should be evaluated in terms of the number of people impacted to determine compatibility. There is currently no provision in the Zoning Ordinance to determine land use compatibility. The Zoning Ordinance should reflect this type of analysis and allow for noise producing land uses which do not impact a large number of people. One



way to accommodate noise producing activities without the influence on non-participants, is to designate an area where noise producing activities can take place. Such a concept would provide an area for auto racing, motorcycles, model airplanes, testing of loud equipment, dog training, and various other commercial or recreational uses which would not disturb a large number of people.



## INTRODUCTION

Historically the bicycle has been a child's plaything, a trend that is changing. Current trends show bicycling by adults for commuting, shopping, and recreation growing at an astounding rate. Many reasons contribute to this increased activity:

1. the availability of the light weight multi-speed bicycle;
2. low initial and operating costs;
3. health benefits;
4. recreational opportunities;
5. environmental benefits, such as conservation of energy, reduction of air and noise pollution, and easing traffic congestion in urban areas.

Bicycling for recreation and transportation is a rapidly growing activity in Sonoma County.

# BIKEWAYS

As bicycle use has increased, so has the number of bicycle accidents, at a faster rate than any other mode



of transportation. It is estimated that in 70% of all bicycle-motor vehicle accidents the bicyclist was breaking one of the "Rules of the Road" and 60% of bicyclists involved in accidents were children under fifteen years of age. Improved bicycle facilities alone will not eliminate the accident problem, but good facilities are necessary to distinctly separate bicycle and auto traffic.

Increased use of bicycles and of bicycle accident rates have resulted in public demand for more and safer bicycling facilities. The Bikeways Element of the General Plan is one response to this demand. It attempts to provide a framework within which a county-wide system of bikeways can be developed which offer utility, safety and efficiency for the bicyclist. The primary goal of the Bikeways Element itself is to develop a Bikeways Plan which places the plans of individual cities' in a countywide perspective and is oriented to bicycle use both for daily transportation and for recreation.

Locally, specific data on the numbers and characteristics of bicycle users and owners is not available. Extrapolating from national per capita ownership estimates, there probably are about 78,000 bicycles and 110,000 bicycle users in Sonoma County.

The most significant change expected in bicycle user patterns is in commute and utility riding. The bicycle is a viable transportation vehicle for trips under 5 miles in length. Currently, the lack of safe, utilitarian and efficient bikeways in Sonoma County restricts the use of the bicycle for utility uses. Local surveys by the cities of Petaluma and Santa Rosa found over 85% of their residents recognizing that bikeways are a necessity. Conflict with the automobile was reported to be the most serious deterrent to the use of the bicycle for transportation in both surveys. These surveys point up the real opportunity for increased utilization of the bicycle if Bikeway Systems that meet the needs of the bicyclist are developed.

The Bikeways Element is a component of the Comprehensive Transportation Element of the General Plan and is one of five elements included in the Sonoma County General Plan which are not required by state law. The Bikeways Element has direct relationships with the circulation, air quality, noise, scenic highways, land use, regional parks, and open space components of the General Plan; references to bikeway relation-



ships are found in the Environmental Resources Management Element, as well as in the Transportation Element.

#### A. BICYCLE UTILIZATION

Bicycle use falls generally into four broad, overlapping categories:

1. transportation deprived users: children and the poor who cannot afford other means of transportation;
2. recreational users; the pedalers who come out in fair weather for recreation and account for over half the total miles of bicycle riding;
3. bicycle buffs: those interested in racing, touring and promoting bicycle use;
4. utility users: bicycle commuters, shoppers and school or university travelers.

Recent studies have been conducted at state and national levels with the intent of providing guidelines for the construction of safe and efficient bicycle facilities. One finding of these studies is that utility users, generally between the ages of 18 and 45 are projected to increase at a faster rate than other types of bicycle users.

#### B. BENEFITS AND INCENTIVES

The bicycle is a non-polluting transportation and recreation vehicle. Bicycle use does not create problems associated with the automobile, such as air and noise pollution, high costs, and extensive space requirements which tend to degrade both the personal and physical environments.

For many persons bicycling has become a symbol of serious commitment to environmental issues, knowing bicycle riding does not contribute to environmental degradation. In Sonoma County 85 percent of all air pollutants are attributed to the automobile. Thus, any diversion of use from the auto to the bicycle will contribute to better air quality. As an energy consumer the bicycle expends one quarter as much energy as walking and is ten to forty times more efficient than any form of motorized transportation.

Bicycling is a pleasant, scenic way to maintain physical fitness. Pedaling helps control body weight, enhances cardiovascular status, develops a slower heart rate, lowers blood pressure and increases strength and endurance. People ride bicycles for recreation because it is a pleasant, social, inexpensive, and readily available activity.



### C. DETERENTS

The most serious deterrents to bicycling are competition with the automobile for space and development funds. The basic space problem exists because roads were designed and constructed without adequate consideration of space for the bicycle. The provision of needed space is forestalled on new and reconstruction road projects due to inadequate funding for nearly all transportation projects and the lack of significant funds specifically allocated for bikeway facilities construction. Thus, when tight money budgets prevail, the provision of space for the bicycle is lost in favor of wider travel lanes and parking for automobiles. Until significant funding used exclusively for bicycle facilities is made available on a continuing basis, the bicycle will remain an underutilized transportation mode, despite its advantages.

Bikeway facilities are generally designed by planners and engineers trained in the design of automobile facilities rather than bikeways. These same planners and engineers view the provision of bikeway facilities as secondary to meeting the needs of automobile drivers. The lack of knowledge concerning the abilities and limitations of the bicyclist and the lack of significant funds set aside for bikeway facility construction have resulted in the implementation of inadequate bikeway facilities.

Analysis of bicycle-motor vehicle accidents tells us the following about the who, when and where of bicycle-motor vehicle accidents. In over 2/3 of all

bicycle-motor vehicle accidents either the motor vehicle driver or the bicyclist did not see the other until the accident was unavoidable. Over 60 percent of all accident victims are under 15 years of age. 33 percent of all accident victims are between the ages of 15 and 34. Male bicyclists were over-involved in accidents, being involved in approximately 80 percent of all accidents.

Accidents occur most frequently from May through September. Sunday is the most hazardous day of the week. The times of 7-9 A.M. and 3-6 P.M. are the most hazardous hours of the day; they correspond to:

1. motor vehicle accident peaks;
2. morning and evening rush hours;
3. the hours when school starts and ends;

Eighty percent of all bicycle accidents happen in the afternoon. Most accidents occur in clear weather, during daylight.

The "What" of bicycle/motor vehicle accidents reveals that the greatest single contributing factor was non-conformance to the rules of the road by the bicyclist, generally by not yielding the right of way to an automobile. Bicyclists involved in accidents can be divided into two major groups: those who

1. cannot conform;
2. will not conform to the rules of the road.

The "cannot conform" group includes the emotionally and physically immature (children under 10 years of age ), those who are ill fitted or unfamiliar with their bicycles, and those who are precipitated into accidents by loss of control of the bicycle through roadway hazards or violation of the bicyclist right of way by other bicycles, motorists or pedestrians. The "will not conform" group is involved in accidents through defiance of the rules of the road, disregard for safe conduct, and stunting or horseplay.

Bicycle theft is another major deterrent to bicycle use. Estimates that nationally over one half million bicycles are stolen annually underscore this concern. Bicycle user surveys in both Petaluma and Santa Rosa found theft to be the second largest deterrent to bicycle use.

The lack of bikeways that meet the needs of the bicyclist must be considered one of the most serious deterrents to bicycle use in Sonoma County. In Sonoma County the vast majority of all bikeway routes are those which are only signed. These offer the least advantage to the bicyclist and rarely any improvement over riding where he chooses. In addition, the bikeway routes of Sonoma County seldom offer the needed space for safe and comfortable riding as evidenced by the great application of the "Signed Route". These bikeways do not connect activity centers nor offer efficiency as many routes are along narrow side streets with many stop signs; rather than on major collector and arterial streets that lead to the majority of activity centers.

Recreational bicycling opportunities are few in Sonoma County. The recreational rider is constrained, for the most part, to use city and neighborhood streets. Many excellent opportunities exist for biketrails, such as along natural waterways, flood control channels, abandoned railroad rights of way, utility transmission rights of way and in parks. Many of these would be fine additions to Sonoma County's recreational facilities for bicyclists and hikers. These biketrails would serve as trail links between parks and communities.

Other constraints on bicycle use are lack of support facilities, inclement weather, longer trip times, physical exertion, minimal carrying ability, and exposure to automobile emissions.

## **GOALS AND POLICIES**

The preparation and recommendations of the Bikeways Element are based on goals and policies accomplished through citizen committee efforts. Listed below are goals and policies adopted by the General Plan Advisory and Transportation Committees.

Implementation recommendations made in subsequent sections of this report are based on and refer to these goals and policies.



## GOALS AND POLICIES RELATED TO RECREATION FACILITIES

### Goal A

It shall be the goal of Sonoma County to provide adequate recreational facilities for both present and future populations, provided such recreational use is consistent with maintenance of environmental quality and protection of property rights.

To this end, it shall be the policy of Sonoma County to:

1. Establish trail systems which connect parks, schools, playgrounds, shopping areas, and other public and scenic areas. Some of the trails should make multiple use of transportation and utility corridors (auto, equestrian, pedestrian, and bicycle traffic), but those uses should be separate where required for safety and convenience. Other trails should traverse relatively undeveloped areas, but provision should be made to prevent property and ecological damage;
2. Provide diversity in the types of recreational opportunities available throughout the County;
6. Make public access available for recreational purposes to major lakes and streams, and to as much of the coastline as possible.

## GOALS AND POLICIES RELATED TO OFFICE AND COMMERCIAL; INDUSTRIAL; AND INSTITUTIONAL LAND USES

These goals and policies sections each contain policies related to bikeways under the subheading of accessibility and design. The relevant policies are identical in each section and are presented below to conserve space.

### ACCESSIBILITY:

1. Provision of balanced accessibility, including, but not limited to pedestrian, public transportation, bicycle and auto;

### DESIGN:

4. Compatibility with adopted transportation plans; including provisions for the ease of traffic flow, adequate parking and accommodation of non-automobile access.

GOALS AND POLICIES RELATED TO SEWAGE AND SOLID WASTE  
DISPOSAL: WATER SUPPLY: OTHER UTILITIES

Goal A

It shall be the goal of Sonoma County to provide facilities which meet the utility needs of the public and are of high ecological and aesthetic quality.

To this end, it shall be the policy of Sonoma County to:

7. Encourage the multiple use of utility owned transmission line rights -of-way for riding and hiking trails, pedestrian ways, landscaped greenways, parking, park areas, and wildlife preserves.

GOALS AND POLICIES RELATED TO TRANSPORTATION

Goal A

It shall be the goal of Sonoma County to have a dynamic transportation plan that provides for changing needs and new technologies.

Goal B

It shall be the goal of Sonoma County to have an integrated transportation system that provides safe and efficient service for the movement of goods and for the travel needs of all citizens.

To this end, it shall be the policy of Sonoma County to:

2. Plan transportation routes (not necessarily roads) which will provide public access to public lands where practicable.
3. Provide fully accessible transportation services and facilities responsive to the needs of the young, aged, handicapped and disadvantaged.

Goal C

It shall be the goal of Sonoma County to have a transportation system that provides for the specific unmet needs of the socially, economically and physically disadvantaged.

To this end, it shall be the policy of Sonoma County to:

1. Require that the transportation system be developed in such a manner that the elderly, the handicapped, the youth, and the citizens of limited means will not be deprived of the opportunity to participate in the full range of human activities often denied them by reason of insufficient mobility.

#### Goal D

It shall be the goal of Sonoma County to have a transportation system that provides the optimum combination of modes in so far as is financially and physically feasible.

To this end, it shall be the policy of Sonoma County to:

1. Evaluate the suitability of all modes of transportation and strive for the development of alternatives to the private automobile;
2. Keep abreast of technology with regard to new modes of transportation with the purpose of upgrading present systems;
3. Design and develop transportation routes to accommodate, wherever practicable, planned transit systems, bikeways, equestrian trails, and pedestrian facilities as well as automobiles and trucks.
4. Strive to utilize existing railroad rights-of-way for future transportation needs, utility corridors, and recreational uses, purchasing where necessary.

#### Goal E

It shall be the goal of Sonoma County to have all modes of the transportation system planned, developed, operated and maintained with a high level of inter-governmental coordination and citizen participation.

To this end, it shall be the policy of Sonoma County to:

2. Review with local agencies and citizens committees the priorities for highway construction, transit or other transportation facilities.

#### Goal H

It shall be the goal of Sonoma County to have a transportation system that has high environmental and aesthetic quality.

To this end, it shall be the policy of Sonoma County to:

1. Plan proposed transportation routes including major and secondary highways, bicycle and bridle paths to be compatible with natural processes and land forms;

#### Goal O

It shall be the goal of Sonoma County to recognize the benefits of increased bicycle use for transportation as well as recreation.

To this end, it shall be the policy of Sonoma County to:

1. Integrate the needs of the bicycle users into all transportation plans and all road improvements;
2. Develop a bikeway system that incorporates safety, efficiency and utility to the bicycle rider;
3. Institute a comprehensive, coordinated bicycle safety education program in all schools to promote bicycle safety;
4. Institute vigorous enforcement of traffic laws as they relate to bicycle use;
5. Integrate law enforcement and educational programs for bicyclists to gain maximum benefit from such programs;
6. Begin a comprehensive and vigorous program to educate motorists as to the rights and requirements of bicyclists on the roadways to facilitate compatible usage of the roads;
7. Apply sound planning and engineering principles to the development of bicycle facilities so as to insure they acknowledge the abilities and limitations of the bicycle user;



8. Where no other alternative offering safety, efficiency, and utility is feasible in high priority bicycling corridors; that automobile parking be removed and off street parking be provided as necessary;
9. Seek standardization of bikeways design and marking;
10. Adopt a uniform countywide bicycle ordinance;
11. Provide parks and park facilities oriented to the bicycle, such as:
  - a. Linear parks utilizing abandoned railway, rights of way with landscape development, picnic areas, sanitary facilities, and trail heads;
  - b. Trail head and rest stops on rural roads;
  - c. Trails and trail head facilities on flood control installations;
  - d. Periodic closure of public streets for bicycle rallies, tours and rodeos;
  - e. New trail systems through public lands for selected multiple uses by pedestrians, bicyclists and equestrians.

#### Goal W

It shall be the goal of Sonoma County to have a transportation system that encourages and gives preference to energy conserving activities.

To this end, it shall be the policy of Sonoma County to:

1. Continually evaluate energy resources and encourage use of those modes of transportation which conserve same.

## **FINDINGS AND CONCLUSIONS**

### BICYCLE SAFETY

Efforts in three major areas will improve the bicycle safety situation; these are Education, Law Enforcement, and Engineering. The overall effectiveness of any

program to reduce the number of bicycle accidents will depend on coordinated endeavors in these three fields. The most significant achievements will come from education programs because the majority of those involved in bicycle accidents are school age children, who are not obeying traffic regulations. Efforts that will insure their knowledge of, and adherence to traffic safety regulations will be the most effective in counteracting bicycle accidents. Law enforcement agencies can complement these programs by coordinating their bicycle safety programs with those of the schools and more vigorously enforcing the Vehicle Code as it relates to bicyclists of all ages. Engineers and Planners of bikeway facilities can provide incentives to bicyclists to obey traffic regulations by providing a system of bikeways that will re-inforce proper roadway behavior and provide an adequate amount of roadway space for safe bicycle riding.

The California State Department of Education's Traffic Safety Education Task Force made an in depth study of bicycle safety and developed pilot programs to improve bicycle safety. These identify "Bicycle Riding Tasks" of bicyclists in safely and cooperatively interacting with other road users; "Critical Behaviors" leading to bicycle accidents; and specific "Performance Objectives" of educational programs to modify these critical behaviors. Additionally, they define target groups based on degree of accident involvement.

The Task Forces analysis of existing school and other bicycle safety programs found:

*The determination of critical behaviors within each target group and performance objectives is essential to the development of any effective safety effort. If bicycle safety education is to have a demonstrable effect upon bicycle accidents, initiation of an intensive educational campaign stressing these critical behaviors as needed, rather than perpetrating activities that do not have any positive transfer in modifying the critical accident causing behaviors. All existing curriculum that were reviewed failed to emphasize these essential performance objectives, concentrating on non-critical tasks such as bike fit, riding double, etc. Therefore, the Task Force has judged these existing curricula as inadequate and ineffective, and recommends the development of intensive pilot programs based on correcting critical behaviors.*

*It should also be noted that critical behaviors, and accompanying educational objectives, should be targeted for persons and groups other than the bicyclist. These include:*

- 1. Parents (of children 0-14 years of age)*
- 2. Enforcement officers*
- 3. Motorists*
- 4. Engineers*
- 5. Judicial officials*

Through the Task Force's "Bicycle Safety Resource Panel", a series of proposed programs were presented in the Panel's Report. The following materials were covered in the "Bicycle Safety Resource Panel" Report which is on file with the California State Department of Education:

- a. Target groups
- b. Critical behaviors
- c. Terminal objectives
- d. Relevant curriculum concepts
- e. Program objectives
- f. Recommended teaching procedures
- g. Evaluation procedures
- h. Appropriate equipment and facilities

A cursory examination of bicycle safety education efforts in Sonoma County leads one to believe that much more can be done in this area. Local bicycle safety education does not meet the objectives as outlined above. Bicycle Safety Education, for the most part, is random without the needed level of coordination between school, law enforcement, judicial, engineering and other lay groups involved in the various local efforts. There are 55 local school districts and 10 law enforcement agencies in Sonoma County, most without any clearly defined bicycle safety program. Bicycle accidents continue to rise in Sonoma County. It is time for a coordinated look at the problem and action taken to remedy the situation.

#### BICYCLE SAFETY RECOMMENDATIONS

The following recommendations are based on Transportation Goal 0, Policies 2, 3, 4, 5 and 6:

1. (a) That a Bicycle Safety Committee be formed by the Board of Supervisors to study what measures can be taken to reduce bicycle accidents;
- (b) That the Committee be composed of representatives from City Schools, County Dept. of Education, Sonoma County Sheriffs Dept., California Highway Patrol, Sonoma County Public Works Dept., City Police Depts., Parents' Groups, and other interested groups;
- (c) That the Committee study existing Bicycle Safety Education Programs and the programs recommended by the State Department of Education, Bicycle Safety Education Resource Panel;
- (d) That the Committee develop a model bicycle safety program for use in local schools and by local law enforcement agencies.
- (e) That the Committee study the feasibility of a program whereby elementary school children are given instruction in bicycling skills, hazard identification techniques and related proficiency requirements before children are allowed to bring their bikes to school.
2. That an ongoing effort by the Bicycle Safety Committee be instituted to monitor bicycle safety efforts and effects and present yearly reports.
3. That all law enforcement agencies adopt a uniform bicycle enforcement dispositional system for the handling of traffic law violators.
4. That a Bicycle Safety Education Program be instituted for police officers.
5. That special bicycle safety training schools be run as a part of the disposition system.
6. That law enforcement agencies improve the present traffic accident reporting system to provide a better reflection of bicycle accident involvement and to gather more relevant information with regard to actual accident causation.



7. That law enforcement agencies increase enforcement of bicycle traffic violations.
8. That engineers and planners attempt to provide the needed roadway space for safe bicycling.

#### BICYCLE ORDINANCE RECOMMENDATIONS

The following recommendations are based on Transportation Goal 0, Policy 10:

1. That uniformity be achieved among the various bicycle ordinances in effect in the cities of Sonoma County.
2. That the County of Sonoma adopt a Bicycle Ordinance.
3. That any bicycle ordinance be patterned after the "Model Bicycle Ordinance" developed by SCR 47 Statewide Bicycle Committee's Final Report of February, 1975, which is presented in the Bike-ways Technical Report.
4. That local bicycle ordinances incorporate these main features of the recommended "Model Bicycle Ordinance":
  - (a) The mandatory licensing and registration of bicycles upon sale or resale;
  - (b) That a bicycle fund be established for monies collected in excess of administrative costs to be used for funding of bicycle safety programs or construction of bikeway facilities;
  - (c) That annual bicycle safety reports be prepared by each jurisdiction on bicycle licensing, registrations, accident data, educational programs, and other pertinent subjects;
  - (d) That each jurisdiction appoint a Bicycle Committee composed of the Traffic Engineer, Chief of Police or Chief of Traffic Division, and member of the City Council or Board of Supervisors, member of the Public Works Dept., Attorney's office, School District representatives, interested lay groups or others as determined by the governing body. Furthermore, a member of each Bicycle Committee should be appointed to the Countywide Bicycle Safety Committee;

(e) That the duties of the Bicycle Committee be:

1. to coordinate all activities of all officers and agencies having authority with respect to the administration or enforcement of bicycle regulations;
2. to stimulate and assist in the preparation and publication of bicycle related reports;
3. to receive complaints having to do with bicycle matters;
4. and to recommend to the legislative body and Chief Traffic Engineer, and Chief of the Traffic Division, and other officials, ways and means to improve bicycling and the administration and enforcement of bicycling regulations.

## THE BIKEWAYS PLAN

### LOCATIONAL CRITERIA

A wide range of considerations must be taken into account in determining the location and type of bikeway to develop. There is no cut and dried formula or method for doing this. It must be emphasized that this is primarily a judgmental process.

The route selections that comprise the Bikeways Plan are based on the following factors:

1. Goals and Policies of the Sonoma County General Plan, in particular those related to transportation, recreation, and bikeways. See section on Goals and Policies;
2. A bikeways plan that is 1) utilitarian; 2) safe and 3) efficient;
3. A bikeways plan developed from the perspective of the bicyclist; one that acknowledges his abilities and limitations;
4. A countywide bikeways plan connecting the separate cities of the County.
5. A bikeways plan that is oriented to the two major uses of the bicycle - transportation and recreation.



6. A bikeways plan that utilizes the many unique opportunities for quality facilities such as abandoned railroad rights of way, natural waterways, flood control channels, utility rights of way and public lands such as parks and open space areas;
7. A bikeways plan that provides accessibility to residential, commercial, employment, educational, cultural, and recreational areas;
8. A bikeways plan that considers the long range land use and transportation plans of the cities and County;
9. A bikeways plan that is integrated with the other elements of the General Plan.

#### DESIGN CRITERIA

The two main purposes of bikeways are to guide the bicyclist to his destination and to provide some measure of protection or safety for him. The type of bikeways included in a bikeway system will determine the measure of safety. A "bikeway" is any type of facility that provides specifically for bicycle travel and is a general term. Thus a bikeway can be anything from a completely separated bike trail within a park to a signed route along city streets.

The University of California Institute of Traffic Engineering prepared a set of classifications of bikeway facilities based on the degree of exclusiveness with which the facility is preserved for bicycle use. This classification system has been widely adopted and is presented here:

## BIKEWAY CLASSIFICATION

*Class I: A completely separated right-of-way designated for the exclusive use of bicycles. Crossflows by pedestrians and motorists are minimized.*

*Class II: A restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles. Through travel by motor vehicles or pedestrians is not allowed. However, vehicle parking may be allowed. Cross-flows by motorists, for example, to gain access to driveways or parking facilities, is allowed; pedestrian cross-flows, for example, to gain access to parked vehicles or bus stops or associated land use, is allowed.*

*Class III: A shared right-of-way designated as such by signs placed on vertical posts or stencilled on the pavement. Any bikeway which shares its through-traffic-right-of-way with either or both moving (not parking) motor vehicles and pedestrians is considered a Class III bikeway.*

Thus, terms such as bike or bicycle trail, path or track are Class *I* facilities; bike or bicycle lanes are Class *II* facilities, and bike or bicycle routes or shared routes are Class *III* facilities.

The following recommended minimum design standards for bikeway facilities are based on Transportation Goal 0, Policies 7 and 9.

### CLASS *I*, BICYCLE TRAIL OR PATH STANDARDS:

*WIDTH:*      2-way - 8 feet  
                 1-way - 4 feet  
                 with pedestrians  
                 2-way - 10 feet or more  
                 1-way - 6 feet or more

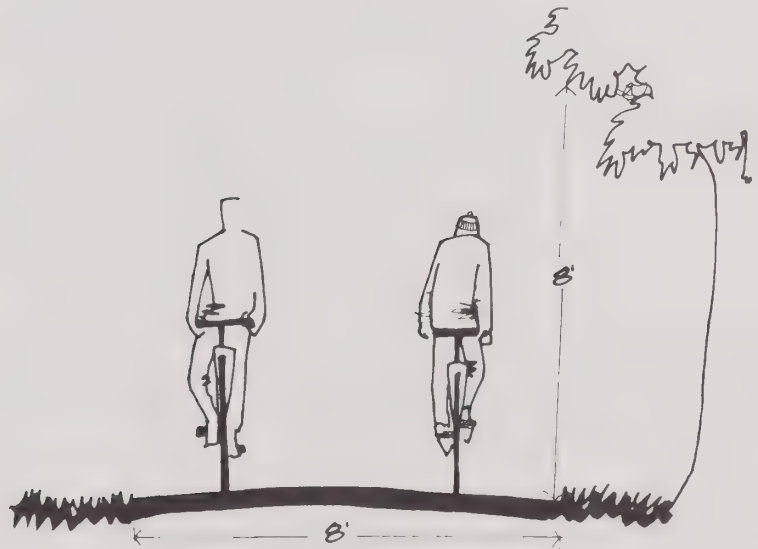
*GRADE:*      minimum grade feasible  
                 less than 2% for long distances  
                 up to 5% for short distances



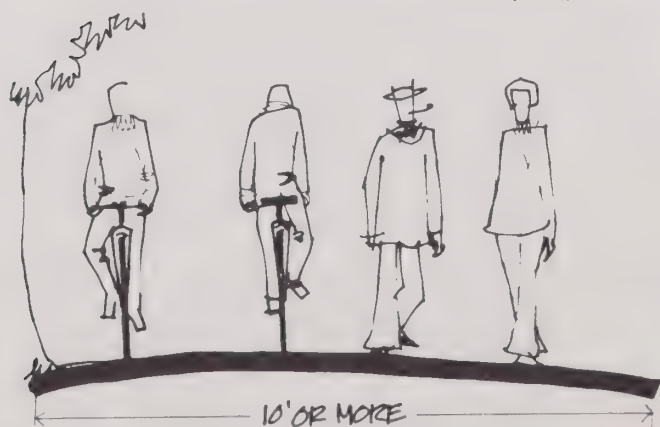
*CLEARANCE:* horizontal - 3 feet to each side  
vertical - 8 feet

*SURFACE:* hard and smooth, preferably asphalt

*SIGNING:* Intersections of independent paths with roadways need particular attention to warning signs for bicyclists and motorists. Optional center striping of heavily used paths is advisable. warning signs for grades, road crossings, narrowing paths, curves and pedestrian crossings are essential. All signing should be standardized throughout Sonoma County; signing should conform to Section 7-1000 of the California Department of Transportation Highway Design Manual.



CLASS I OR BICYCLE TRAIL



CLASS I WITH PEDESTRIAN USE

## CLASS II, BICYCLE LANE OR BIKELANE STANDARDS:

**WIDTH**      minimum - 4 feet  
                 standard - 5 feet  
                 desirable - 6 feet  
                 auto parking apron - 8 feet - minimum

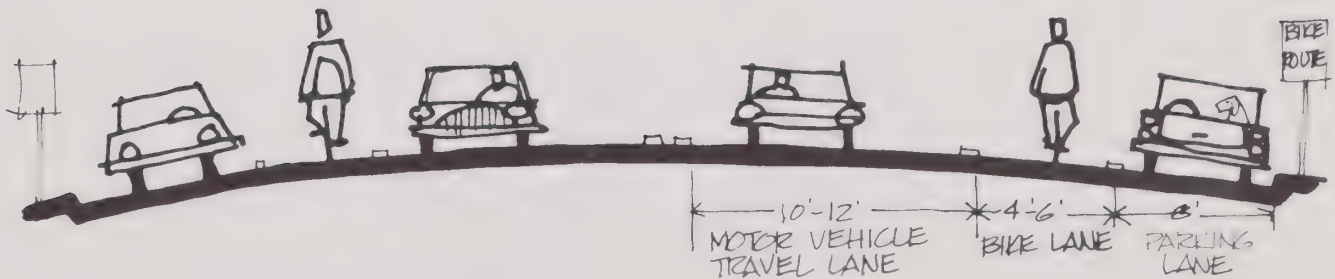
**GRADE:**      that of adjoining roadway

**CLEARANCE:** provided in standard 5 foot width

**SURFACE:**    asphalt, maintained and clear of debris

**SIGNING:**    standard "BIKE ROUTE" and "BIKE XING" signs, 4" to 6" white stripe adjacent to motor vehicle travel lane, 4 foot high stencilled pavement marking saying BIKE LANE with directional arrow, optional 2" white line delineating parking apron.

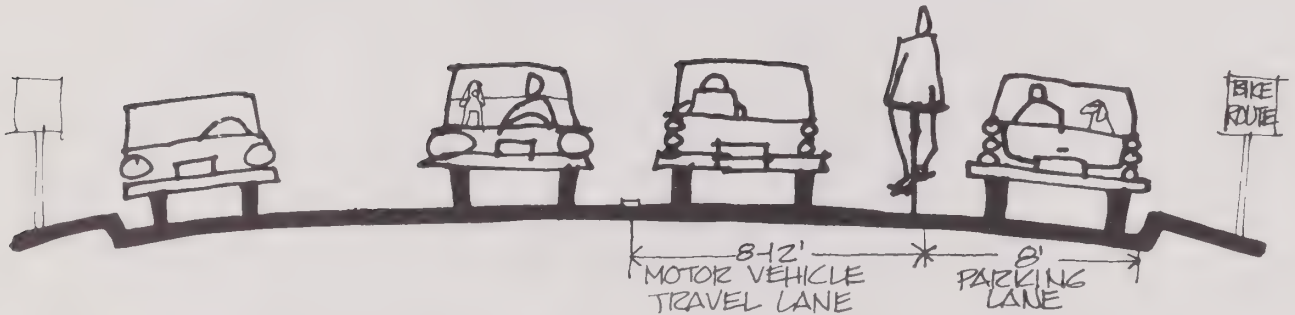
NOTE: Bikelanes are for one-way travel on opposite sides of streets. Sidewalk bikelanes and bikelanes between curb and parking are not recommended. Two-way bike lanes on one side of street should be discouraged.



CLASS II OR BIKE LANE

CLASS *III*, BICYCLE OR BIKE ROUTE STANDARDS:

<i>WIDTH:</i>	Variable from 0 to 4 feet or more depending on roadway width
<i>GRADE:</i>	that of roadway
<i>CLEARANCE:</i>	that of adjoining roadway
<i>SURFACE</i>	asphalt
<i>SIGNING:</i>	standard "BIKE ROUTE" AND "BIKE XING" signs. Signing of beginning and ending of routes and directional arrows at route turnings



CLASS III OR BIKE ROUTE

RECOMMENDED USES FOR CLASS *I*, *II*, OR *III* BIKEWAYS:

<i>CLASS I:</i>	recreational trails
<i>CLASS II:</i>	transportation bikeways
<i>CLASS III</i>	<ol style="list-style-type: none"><li>1. recreational touring routes</li><li>2. transportation routes when:<ol style="list-style-type: none"><li>a. sufficient roadway space is available for a 5' bicycle lane</li><li>b. sufficient roadway space is not available and no other facility or route is feasible and significant bicycle traffic is present (60 peak hour, 200 day)</li><li>c. as an interim measure until bicycle lanes are provided.</li></ol></li></ol>

## THE BIKEWAYS PLAN: DESCRIPTION

The Bikeways Plan has been divided into two separate parts, reflecting the two major uses of the bicycle. Recreation oriented bikeways are shown on the county-wide map. Transportation oriented bikeways are shown on six following page sized maps. The Bikeways plan should be viewed as a combination of both the recreation and transportation routes shown. This plan meets the needs of the recreational and transportation bicycle rider when implemented according to the foregoing sections on locational and design criteria which are intended to provide a utilitarian, safe and efficient bikeway system for Sonoma County.





## RECREATIONAL BIKEWAYS

The Bikeways shown have been selected to provide a diverse and varied bicycling experience for the rider. Care has been exercised to provide facilities and routings of various lengths to match the abilities of all bicyclists. In selecting the routes shown, the Bikeways plans of the cities were incorporated along with the best opportunities available in the County.

### ROADWAY BICYCLE TOURING ROUTES

These routes follow county and state roads. They were selected to give the cyclist a varied experience, to offer long distance routes with minimal grades, and to connect the major scenic and recreation areas of the County. These routes often correspond with proposed Scenic Highways while connecting the cities of the County and providing bicycle tours of various lengths for citizens of each community.

### CREEKSIDE BICYCLE TRAILS

These routes are off the road bicycle paths along waterways and the shores of lakes and offer some of the finest opportunities for bicycle trails in Sonoma County.

### CROSS COUNTRY BICYCLE TRAILS

These routes are independent paths in parks or utilize old railroad grades. These paths offer unique opportunities to see and appreciate our fine countryside.

### CALTRANS BICYCLE TOURING ROUTE

These routes were selected by the California Department of Transportation (CALTRANS) as bicycle touring routes in Sonoma County.

### STATE AND COUNTY PARKS; AND PROPOSED RECREATION AREAS

These existing and proposed State and County recreation areas will be connected by Bikeways.





# BIKEWAYS

## LEGEND



- ROADWAY BICYCLE TOURING ROUTE
- CREEKSIDE BICYCLE TRAIL
- CROSS COUNTRY BICYCLE TRAIL
- CALTRANS BICYCLE TOURING ROUTE
- STATE AND COUNTY PARKS
- PROPOSED RECREATION AREAS







## TRANSPORTATION BIKEWAYS

The bikeways shown on the following pages connect all major activity centers of each community. For the most part these are arterial and collector streets. In some cases bikeways will not be feasible on the routes shown. The routings are included to emphasize where bikeways are most needed to serve as transportation links in a system of bikeways. Other routings should be developed to serve these activity centers or transportation corridors.

Three types of bikeways have been shown. Recreational bikeways are shown so that the interrelationship of recreation and transportation routes is clear. It should be remembered that the function of all routes especially in urban areas are both for recreation and transportation purposes.

Those routes primarily of use for transportation have been divided into "High Priority" and "Long Range Priority" routes. The distinction between the two types is that those routings shown as "High Priority" form a minimal bikeways system linking the major activity centers and providing north-south and east-west routes through the community.

The Long Range Priority routings are also needed now if all the needs of the bicyclist are to be adequately met. In the future they will be required as part of a minimal bikeway system.

In developing the route selections, special emphasis was placed on integrating long range transportation plans, the County select road system, and the bikeways plans of the Cities of Cotati, Petaluma, Rohnert Park and Santa Rosa, and the recreational bikeways plan. This integration will allow the majority of these bikeways to be implemented along with necessary road improvements.

This plan will make the bicycle a viable part of our transportation system, and allow the use of the bicycle for shopping, commuting, school and other utility uses, as well as augmenting the Regional Parks Plan.

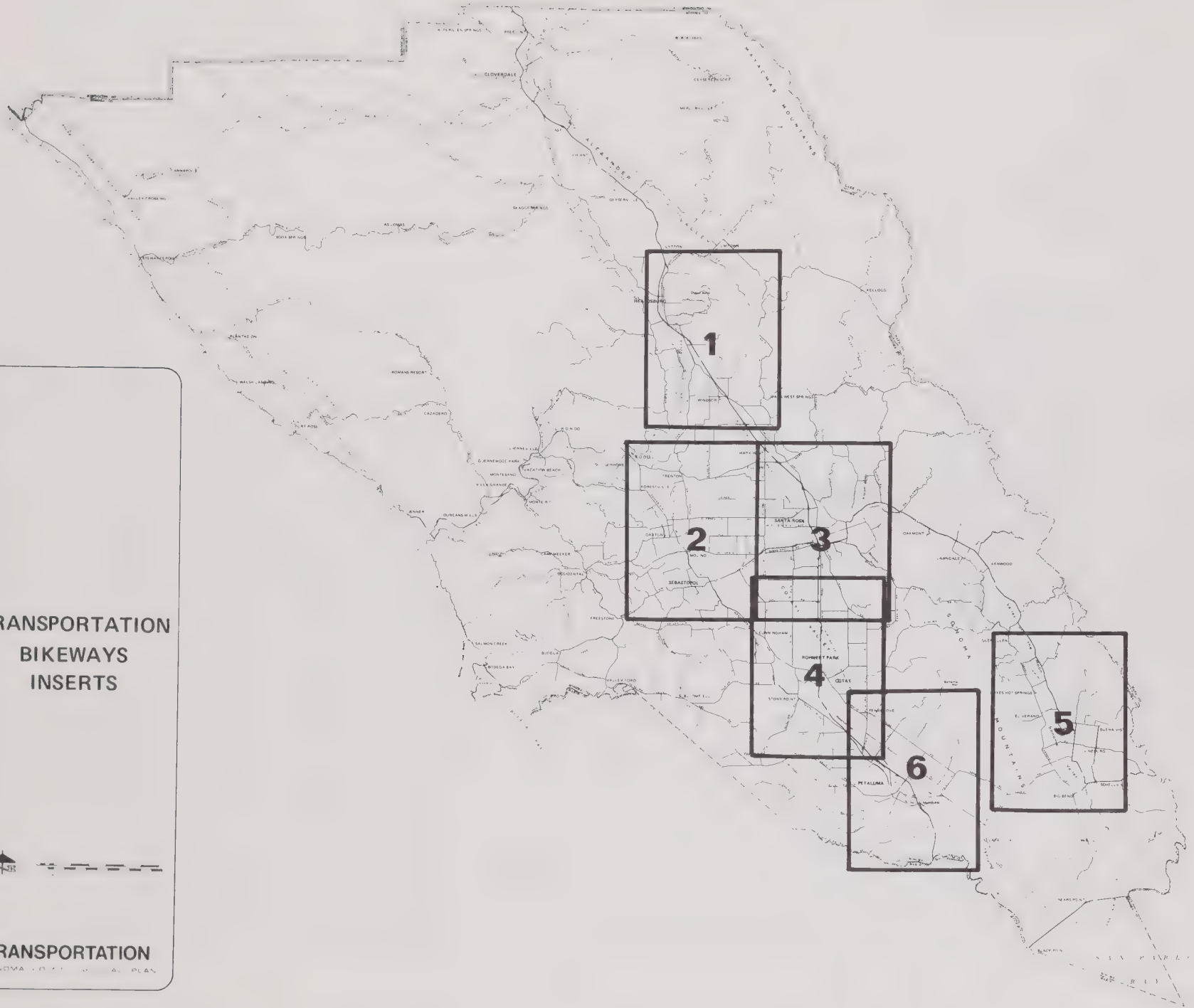
A Transportation Route not shown on the following maps is a high priority route along Highway 116 and River Road from Monte Rio to Mirabel.



**TRANSPORTATION  
BIKEWAYS  
INSERTS**



**TRANSPORTATION**  
SONOMA COUNTY GENERAL PLAN



Larkfield  
Wikiup

RIEBLI

## TRANSPORTATION BIKEWAYS

●●● HIGH PRIORITY

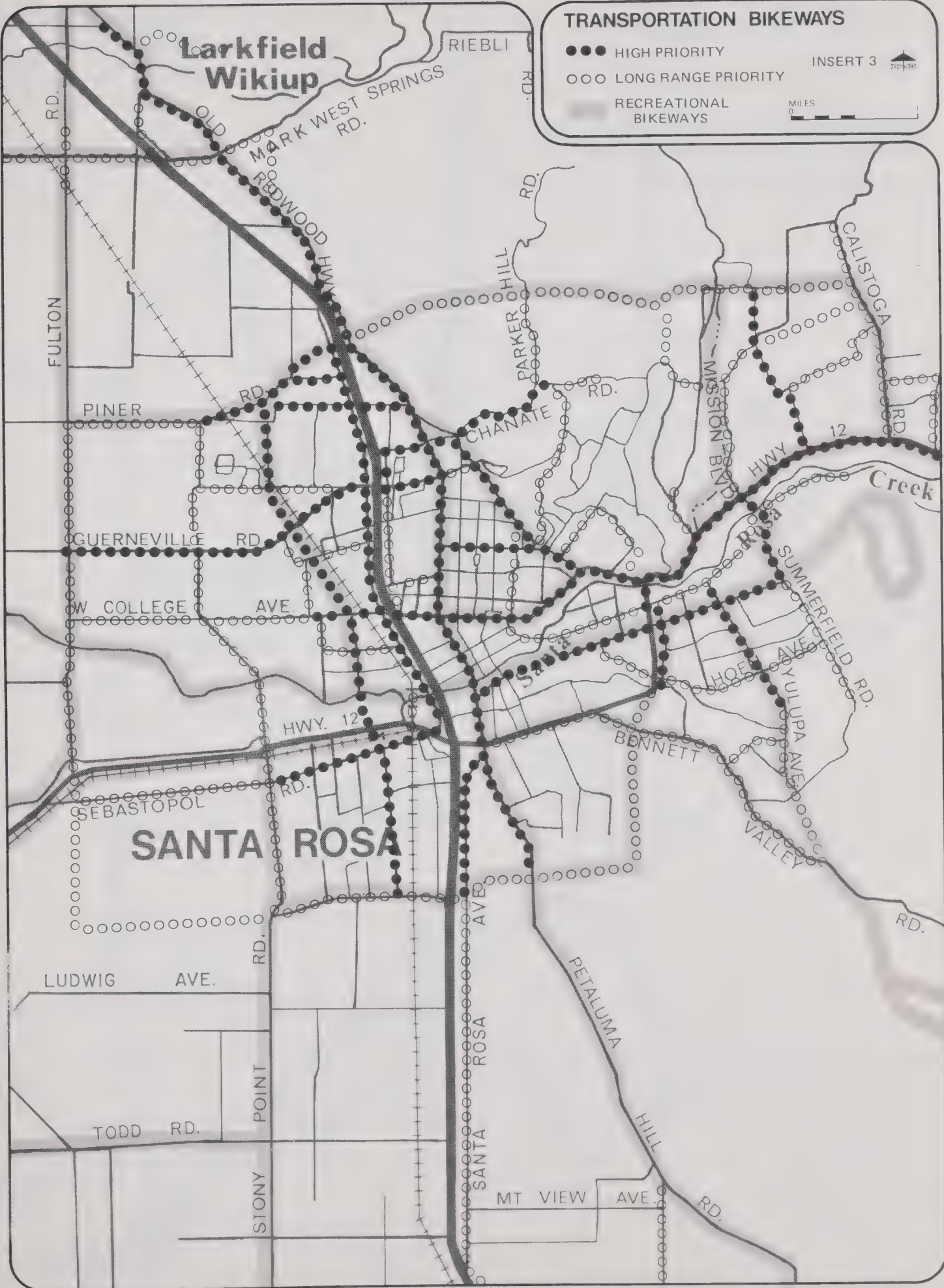
○○○ LONG RANGE PRIORITY

RECREATIONAL  
BIKEWAYS

INSERT 3

MILES

0 1





## TRANSPORTATION BIKEWAYS

●●● HIGH PRIORITY

○○○ LONG RANGE PRIORITY

RECREATIONAL  
BIKEWAYS

INSERT 4



MILES  
0 1 2



TODD RD.

POINT

de STONY

Laguna

GRAVENSTIEN

HWY.

Santa

Rosa

MT. VIEW AVE.

SANTA ROSA AVE.

SNYDER LN.

CRANE  
CANYON RD.

ROHNERT  
PARK

ROHNERT PARK EXPRESSWAY

SONOMA  
STATE  
COLLEGE

COTATI AVE.

COTATI

RD.

HILL

ROBERTS  
RD.

ROBLAR

W. SIERRA AV.

OLD

REDWOOD

E. RAILROAD

AVE.

PETALUMA

RD.

RD.

HWY. 101

Penngrove

MECHAM

RD.

PEPPER

RD.

FLY PD.

## TRANSPORTATION BIKEWAYS

●●● HIGH PRIORITY

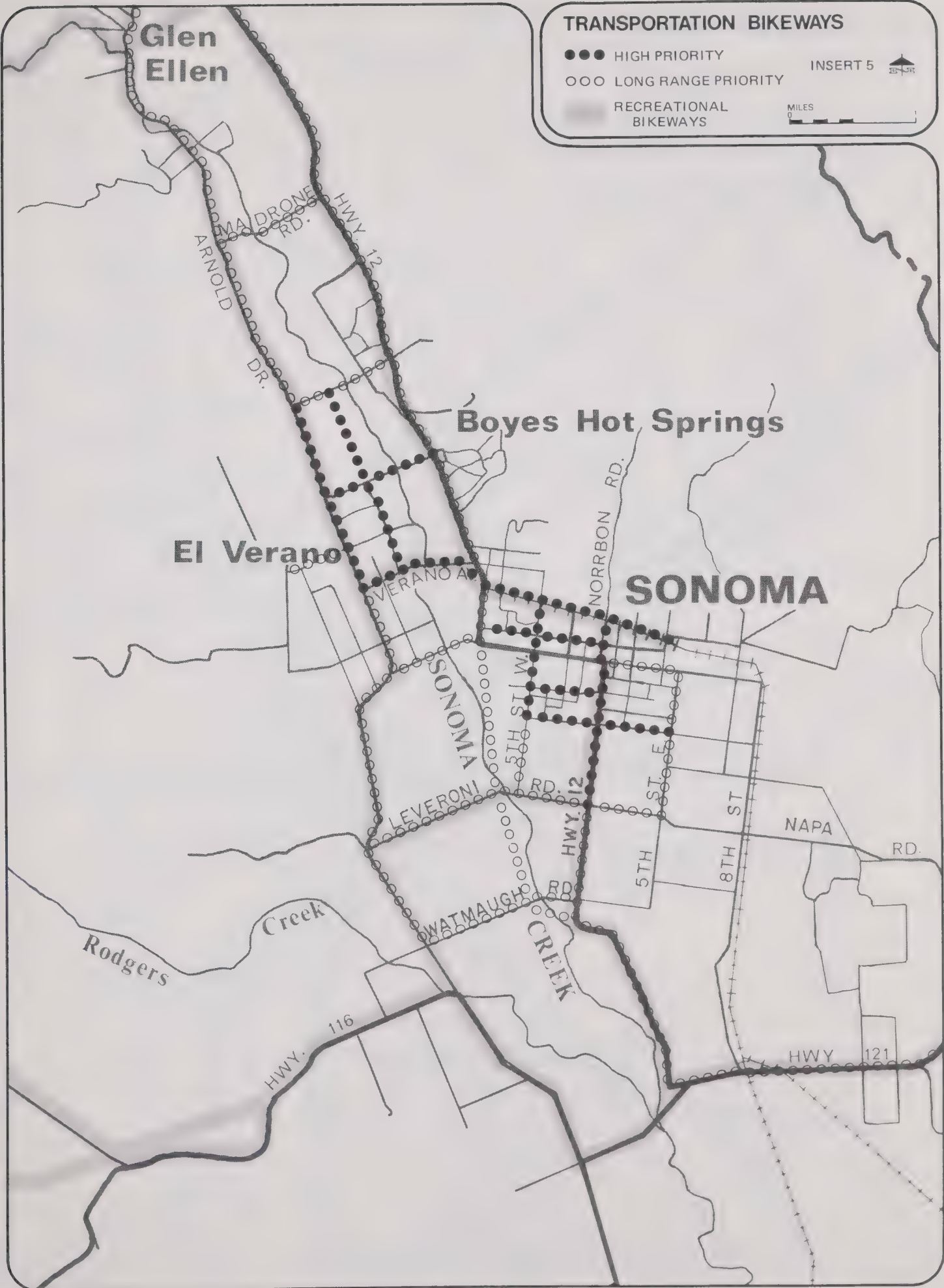
○○○ LONG RANGE PRIORITY

RECREATIONAL  
BIKEWAYS

INSERT 5



MILES





# TRANSPORTATION BIKEWAYS

●●● HIGH PRIORITY

○○○ LONG RANGE PRIORITY

RECREATIONAL  
BIKEWAYS

INSERT 6



MILES



**Pennngrove**

SKILLMAN LN.

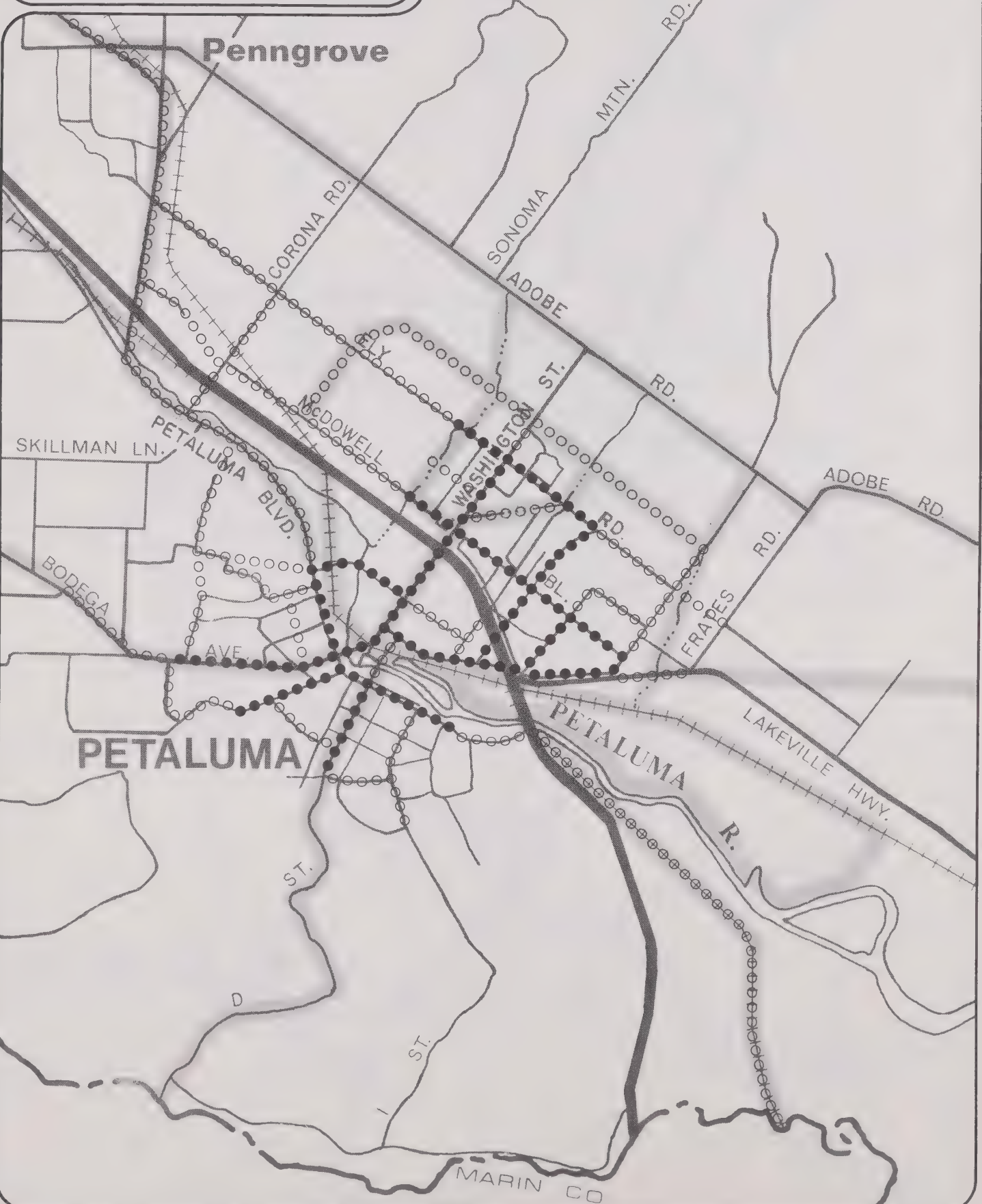
BODEGA

**PETALUMA**

ST.

ST.

MARIN CO



# TRANSPORTATION BIKEWAYS

●●● HIGH PRIORITY

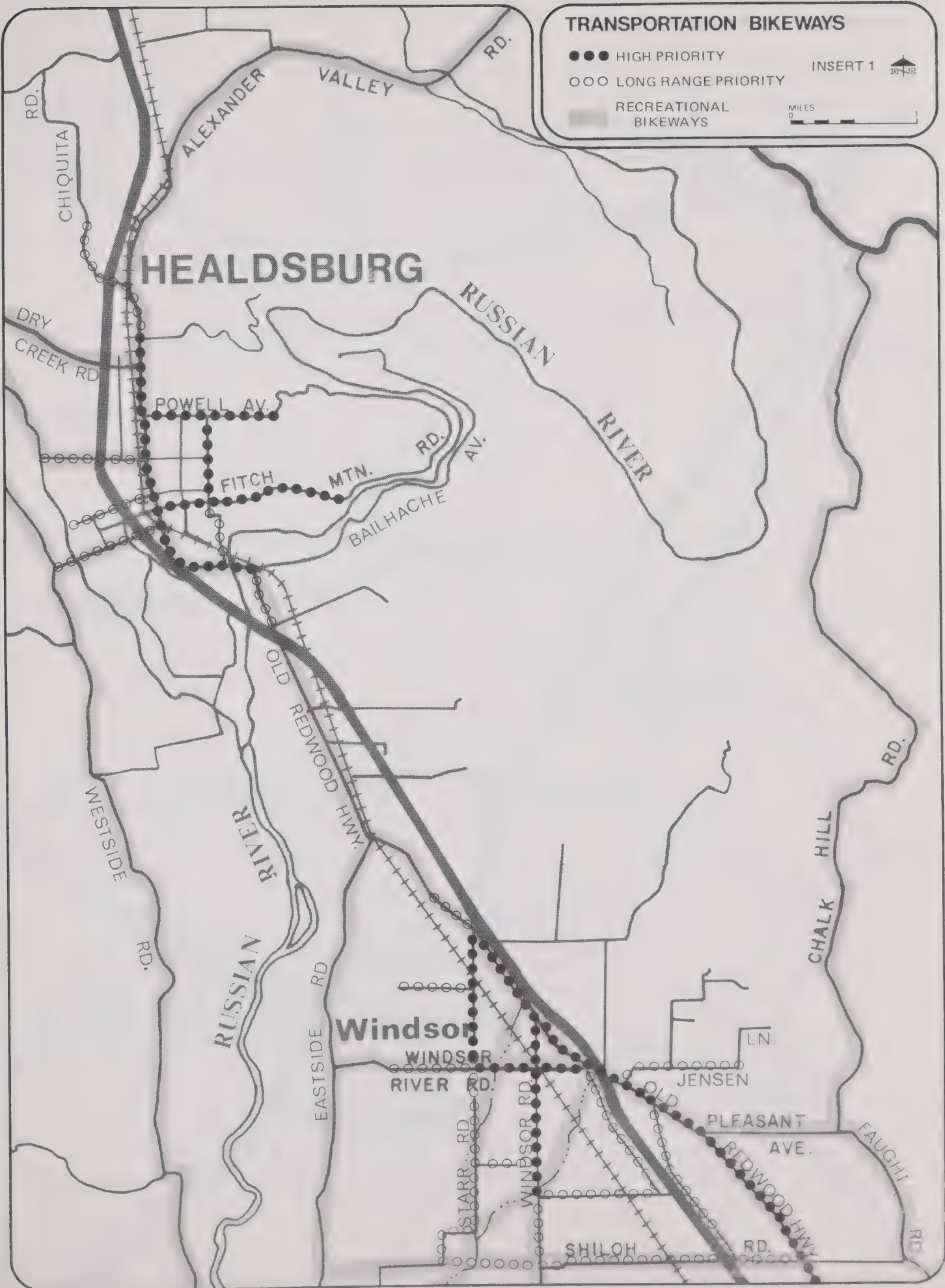
○○○ LONG RANGE PRIORITY

RECREATIONAL  
BIKEWAYS

INSERT 1



MILES





# TRANSPORTATION BIKEWAYS

●●● HIGH PRIORITY

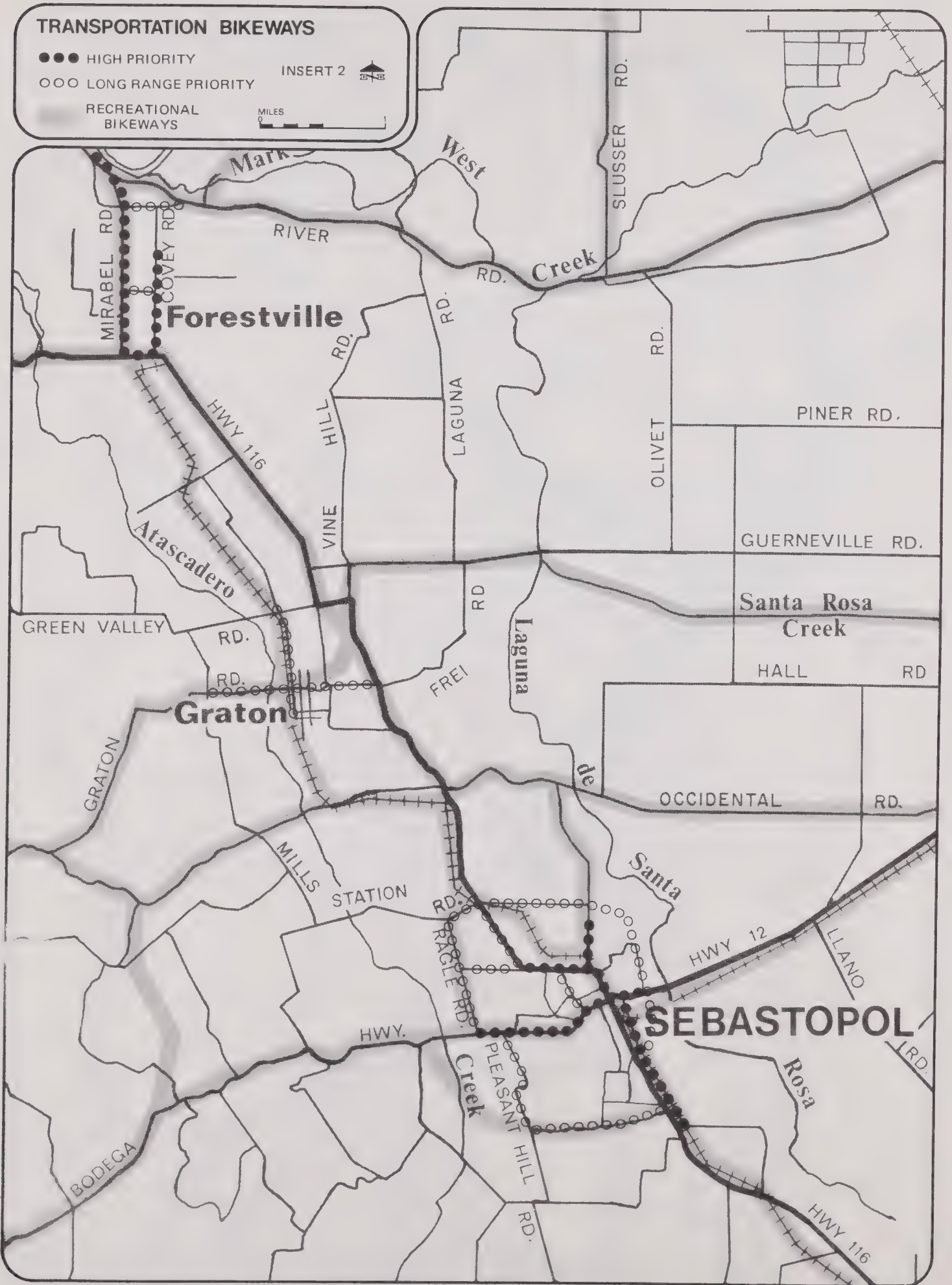
○○○ LONG RANGE PRIORITY

RECREATIONAL  
BIKEWAYS

INSERT 2



MILES  
0 1



## **BIKEWAYS PLAN**

### **IMPLEMENTATION RECOMMENDATIONS**

1. that the Sonoma County Superintendent of Schools coordinate bicycle safety education programs.
2. that the Sonoma County Regional Parks Department assume responsibility for the implementation of recreational bikeways.
3. that the Sonoma County Department of Public Works assume responsibility for the implementation of transportation oriented bikeways.

### FUNDING RECOMMENDATIONS

1. that matching State and Federal funding be sought to better utilize local funds.
2. that joint City-County bikeways projects be developed to better utilize State and Federal funding sources; so that significant facilities can be developed rather than a proliferation of small discontinuous projects.
3. that local funding be provided on a continuing basis so that phased implementation of bikeway systems can be achieved.
4. that all future construction and reconstruction of arterial and collector roadways include provision of roadway space for bicycle lanes.
5. that paved shoulders be provided on all road construction and reconstruction projects along designated bicycle touring routes.
6. That a coordinated capital improvements program be developed by the Sonoma County Public Works and Regional Parks Departments to determine the priority and costs of implementing transportation and recreation bikeways in the unincorporated communities of Sonoma County and develop phased implementation plans.



## INTRODUCTION

Sonoma County residents experience the cleanest air in the Bay Area. The air is cleaner today than it will be for the next five to ten years. The air quality conditions of the more distant future depend upon the political commitment of today's decision makers. Any lack of commitment could result in significant deterioration of air quality.

The Air Quality Element is included as one component of the Transportation Element. The development of an air quality element is not specifically mandated by planning law. The inclusion, however, of an air quality element is allowed under Sec. 65303 (j) of the California Government Code.

*"such additional elements dealing with other subjects which in the judgment of the planning agency relate to the physical development of the county or city."*

# AIR QUALITY



The Air Quality Element serves several purposes. It outlines action steps necessary for the implementation of Air Quality goals and policies as developed by the Transportation Advisory Committee and the Noise and Air Quality Subcommittee of the General Plan Advisory Committee. The Baseyear (1973) air quality analysis provides the most accurate assessment possible of the present day air quality. This inventory allows quantitative evaluation of transportation system plans and programs and provides factual data for corrective action. The quantitative air quality analysis of the Land Use and Transportation Plans will be a reference in the Environmental Impact Report of the General Plan, as required by State law.

### SONOMA COUNTY AIR QUALITY

Sources of air pollution can be divided into two basic groups, stationary sources and mobile or transportation sources. Examples of stationary sources are quarry operations, agricultural activities, industrial activities and lumber mills. Mobile sources include trucks, trains, aircraft, and most importantly, automobiles. As can be seen in Exhibit 1, transportation sources far outweigh stationary sources in their contribution to the total pollution in the County. For the great majority of the population, air pollution means automobiles.

EMISSION SOURCES BAY AREA AND SONOMA COUNTY		PARTICULATES				
		HYDROCARBONS		NOx	SO <sub>2</sub>	CO
BAY AREA (BAAPCD JURISDICTION)	TOTAL *	160	1200	280	260	4200
	TRANSPORTATION	31%	53%	62%	8%	93%
	OTHER	69%	47%	38%	92%	7%
SONOMA COUNTY (BAAPCD JURISDICTION)	TOTAL	9	60	36	2%	280
	TRANSPORTATION	34%	68%	88%	50%	93%
	OTHER	66%	32%	12%	50%	7%

EXHIBIT I                      \* ALL FIGURES TONS/DAY                      SOURCE: BAAPCD

Air pollutants take two forms: gases and particulate matter. Some gases are colorless and odorless, such as carbon monoxide (CO); others, may be visible: nitrogen dioxide produces a whiskey brown haze. Whether they can be seen or not, these contaminants can adversely effect the public health or welfare. Photochemical smog, the most well known form of air pollution is the result of chemical reaction which takes place in the atmosphere between two types of gases (nitrogen dioxide and reactive hydrocarbons) under the influence of sunshine. The automobile is the biggest source of these gases.



Particulates, abundant in such natural circumstances as volcanic eruptions and windstorms, are, in Sonoma County, attributable to several industrial and agricultural sources, as well as many day to day activities. Particulate matter may be experienced as dust on the horizon, smoke over an agricultural site or recurring and bothersome household dust.

Air pollution has a wide range of effects on man, plants, and materials. Experts agree that air pollution does affect human health. A United States Public Health Service publication states *"... air pollution, as it exists in some of our communities, contributes significantly as a cause or aggravating factor for the following medical conditions; acute respiratory infections, chronic bronchitis, chronic constrictive ventilatory disease, pulmonary emphysema, bronchial asthma, and lung cancer."* Damage to plants from air pollution includes bloom failure, plant malformation, leaf and fruit drop and failure of fruit to ripen. A conservative estimate places the Bay Area's annual loss to commercial growers in excess of \$5,000,000. This figure excludes damage to home gardens. Sonoma County's share of this estimated agricultural loss is sizeable.

Other damage to materials can include darkening of paint, cracking of rubber and increased susceptibility to corrosive effects. Such damage runs into millions of dollars annually in the Bay Area.

## AIR QUALITY STANDARDS AND MAINTENANCE

State and Federal Air Quality Standards are the result of scientific investigation into air pollution levels at which damage to humans, plants and materials occur. Evidence indicates that if the primary air quality standards are met, eye and throat irritation and more serious effects will not appear even among the most sensitive members of the public. The more stringent secondary standards are designed to protect property and aesthetics. The Federal Clean Air Act and State Air Quality Act cite air quality standards aimed at levels of air pollution which must be achieved to safeguard the public health and welfare. The Federal and State Acts mandate the achievement of these clean air goals.

### OBJECTIVES OF AIR QUALITY STANDARDS

<u>SUBSTANCE</u>	<u>OBJECTIVE</u>
SULFUR DIOXIDE	TO PREVENT INCREASE IN RESPIRATORY DISEASE PLANT DAMAGE & ODOR
CARBON MONOXIDE	TO PREVENT CARBOXY- HEMOGLOBIN LEVELS GREATER THAN 2%
PHOTOCHEMICAL OXIDANT	TO PREVENT EYE IRRITATION AND BREATHING DIFFICULTIES
PARTICULATE	TO IMPROVE VISIBILITY
NITROGEN DIOXIDE	TO PREVENT HEALTH RISK AND IMPROVE VISIBILITY.
NON-METHANE HYDROCARBONS	TO PREVENT OXIDANT BUILDUP.
LEAD	TO PREVENT HEALTH PROBLEMS
HYDROGEN SULFIDE	TO PREVENT ODOR

EXHIBIT 2

SOURCE: BAACPD

As has been the trend in government, special purpose agencies have evolved in relation to the provisions of the Clean Air Acts. In California, the Air Resources Board (ARB) is the agency which administers air pollution legislation. The ARB has delineated 11 air basins; areas which have common meteorological and geographic conditions so that efforts to meet the clean air goals can be effectively coordinated. Sonoma County is divided between two Air Pollution Control



Districts. Exhibit 3 shows this division. The intent of this division is to separate the resource based industrial sources of the northern part of the county from the urban/industrial sources of the southern part of the county.

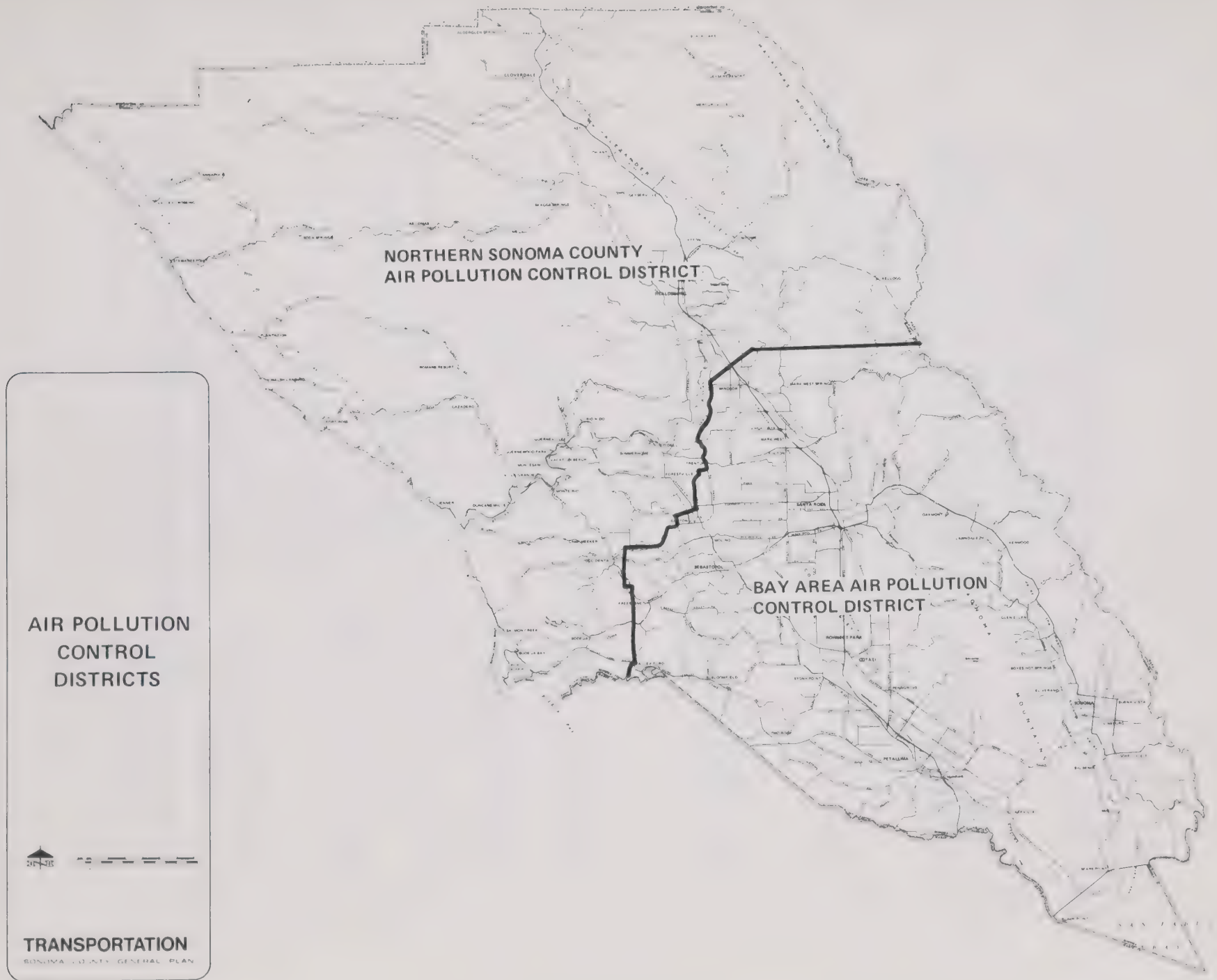
A listing of all agencies involved in air quality maintenance along with their actions and responsibilities is illustrated in Exhibit 4.

An examination of this exhibit will reveal that regional and local agencies can only directly control stationary sources. The Air Pollution Control Districts must enforce the State Air Quality Standards and Performance Standards (operative standards relating to specific pieces of industrial equipment) but may formulate and enforce more stringent stationary source standards. Automobiles are controlled on the State level by virtue of the imposition of vehicular control devices and other measures. The State of California has the most stringent motor vehicle emission standards in the nation. The schedule of compliance set up in relation to these standards will, if adhered to, bring about achievement of the clean air goal for most of the state. Adherence to this schedule, however, requires a firm and continuing political commitment.

Approximately 85% of the County's air pollution can be attributed to the automobile, and barring unforeseen technological, political, and economic changes, it will continue to be the major source indefinitely. Consequently, the effectiveness of automobile emission control devices and the degree of adherence to the state's compliance schedule will determine air

quality for the county's future citizens. In the absence of a firm political commitment at the state or federal level to achieve air quality standards, growth control and other emission reduction strategies would have to be considered if substantial deterioration of air quality in Sonoma County is to be avoided.

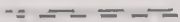




	AGENCY	ACTIONS AND RESPONSIBILITIES
FEDERAL	CONGRESS	MANDATES MOTOR VEHICLE EMISSIONS STANDARDS MANDATES E.P.A. ACTIONS AND RESPONSIBILITIES
	ENVIRONMENTAL PROTECTION AGENCY	ESTABLISHES AMBIENT AIR QUALITY STANDARDS REQUIRE AND APPROVE STATE IMPLEMENTATION PLANS TO ACHIEVE AMBIENT AIR QUALITY STANDARDS
STATE	STATE LEGISLATURE	MANDATES MOTOR VEHICLE EMISSION STANDARDS MANDATES A.R.B., A.P.C.D.S. ACTIONS AND RESPONSIBILITIES
	AIR RESOURCES BOARD (A.R.B.)	ESTABLISHES AMBIENT AIR QUALITY STANDARDS ESTABLISHES STATIONARY SOURCE PERFORMANCE STANDARDS ENFORCES MOTOR VEHICLE EMISSION STANDARDS DETERMINES NO-BURN DAYS FORMULATES STATE IMPLEMENTATION PLAN ESTABLISHES AIR BASINS MAY DELEGATE REGULATORY POWERS TO REGIONAL/ LOCAL AGENCIES.
	DEPARTMENT OF MOTOR VEHICLES HIGHWAY PATROL	ADMINISTERS RETROFIT PROGRAM  ADMINISTERS VEHICLE EMISSION CONTROL DEVICE INSPECTION
REGIONAL AND LOCAL	BASINWIDE AIR POLLUTION CONTROL COORDINATING COUNCIL	FORMULATES BASINWIDE IMPLEMENTATION PLANS
	REGIONAL AIR POLLUTION CONTROL DISTRICT (BAAPCD)	ISSUES ABATEMENT ORDERS VEHICLE CONTROL - CITES DRIVERS OF CARS EMITTING SMOKE LEVIES TAXES ENFORCES STATIONARY SOURCE PERFORMANCE STANDARDS ISSUES PERMITS TO CONSTRUCT AND/OR OPERATE STATIONARY SOURCES.
	REGIONAL AND LOCAL AIR POLLUTION CONTROL DISTRICT	REVIEWS INDIRECT SOURCE PERMITS ENFORCES VIOLATIONS OF NO-BURN DAY BAN
	FIRE PROTECTION AGENCY SHERIFF	ADMINISTERS NO BURN DAY BAN  INVESTIGATES NUISANCE COMPLAINTS
	PLANNING AGENCY PUBLIC WORKS DEPARTMENT	DESIGNS AND ADMINISTERS AIR QUALITY MAINTENANCE PROGRAM THROUGH LAND USE AND TRANSPORTATION CONTROLS

EXHIBIT III

SOURCE: ADVANCED PLANNING DIVISION



TRANSPORTATION

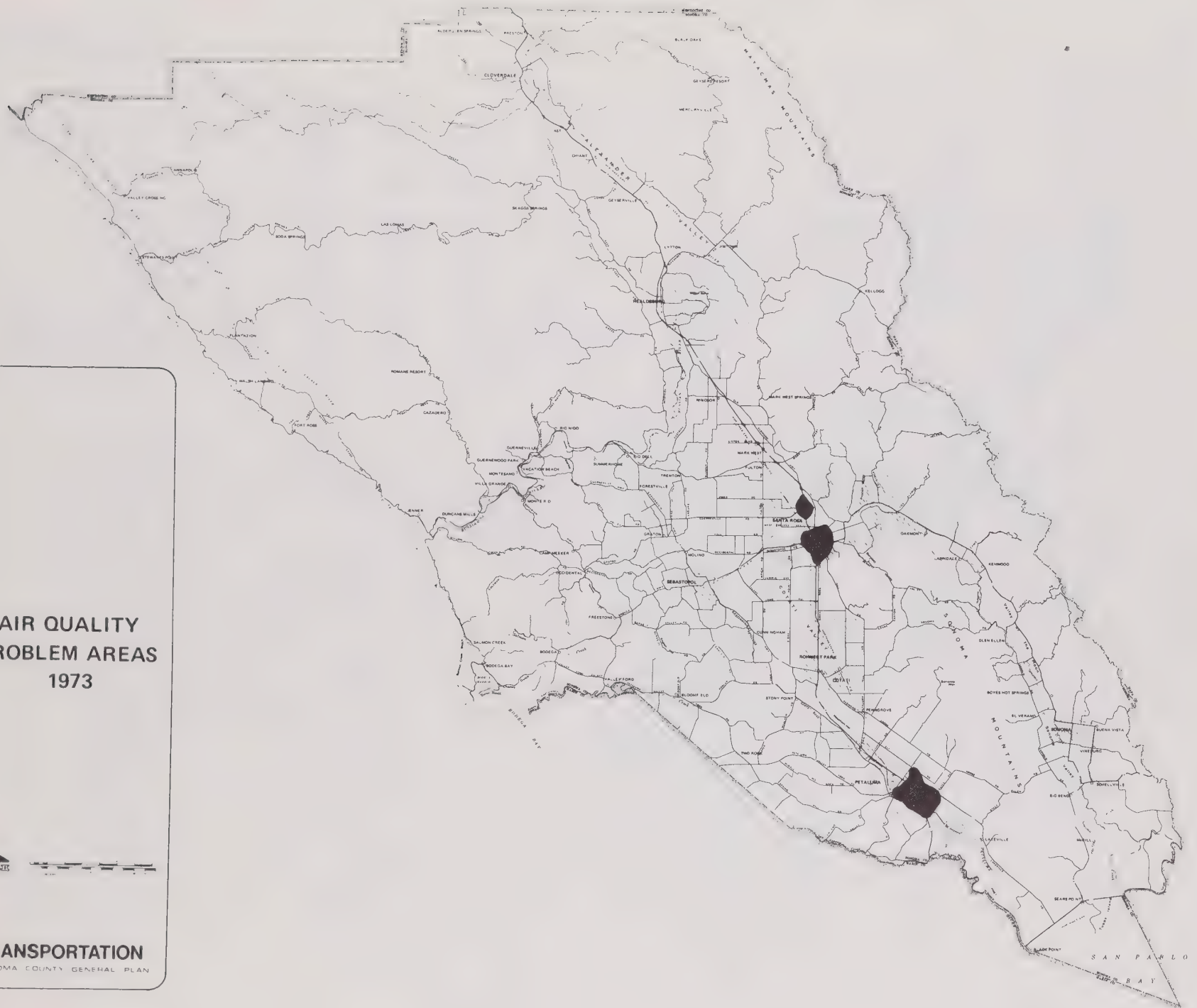
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# AIR QUALITY PROBLEM AREAS 1973



**TRANSPORTATION**  
SONOMA COUNTY GENERAL PLAN



## THE AIR QUALITY STUDY

The Bay Area Air Pollution Control District Planning and Research Division working with the Sonoma County Planning and Public Works Departments, have developed a series of preliminary technical analyses of future air quality situations. The Air Pollution Control District employs a dispersion model which couples emission levels with corresponding meteorological situations to arrive at estimates of air pollution concentrations. The County staff has supplied emissions data based on population, land use and traffic volumes. The analyses are discussed below.

### (1) Baseyear (1973) Analysis

The Baseyear analysis provides the County with an accurate estimate of air quality as it is today. 1973 population, land use and traffic volume data were combined with Bay Area Air Pollution Control District 1973 emission factors to produce an inventory of emissions by type of contaminant. The Air Pollution Control District converted these emissions to concentrations of pollutants for all locations within the study area (*See Exhibit 5*). This analysis serves as a basis of comparison for all future year comparisons.

The Baseyear analysis points out existing air quality problems. Exhibit 6 is a composite of these results and shows the location of these problem areas. This information provides insights into the type of land use and transportation situations which may lead to levels of air pollution exceeding air quality standards. The baseyear analysis plays an intrinsic role in the design of the evaluation framework dealt with later in this summary.

### (2) Baseline (2000) Analysis\*

The Baseline air quality analysis provides the County with an estimate of the air quality impacts of that land use and transportation projection. The population, land use and traffic volumes generated by the County Staff and Transportation Consultant were combined with Bay Area Air Pollution Control District emission factors to produce an estimate of emission levels in the year 2000 under the Baseline assumptions. Two sets of emission factors were applied, one to simulate successful achievement of clean air goals and one to simulate complete failure, to provide the County with the range of impacts. This range relates directly to the degree of political commitment required for the achievement of clean air goals.

\*Baseline projected a population of 478,000 by the year 2000 and was based on trends and past growth rates. A complete description is provided in the Community Development Element.

This analysis resulted in two entirely different air pollution situations in the year 2000. The factors which simulate complete fulfillment of the clean air goals give an air quality picture better than exists today. The County would experience no excesses of any air quality standards.

The emission factors that assume automobile engines no cleaner than those of today show quite another picture. Downtown Santa Rosa's air quality would be close to what San Jose experiences today, and serious problems would result throughout the Highway 101 Corridor from Santa Rosa south. The most sensitive members of the public would certainly experience adverse effects from this level of pollution. This set of results dramatizes the extent to which the County's air quality could deteriorate if the state and federal emission control schedules are not observed.

### (3) ABAG Air and Water Quality Study

An air and water quality study of Sonoma County is now being conducted by the Association of Bay Area Governments in cooperation with Sonoma County and the Bay Area Air Pollution Control District. This study relies heavily on locally generated information and should provide insights into the relationships between land use planning and air and water quality.

### (4) Gronorth (2000) Analysis

The Gronorth air quality analysis, being developed in conjunction with the Association of Bay Area Governments, is expected to provide an estimate of the air quality impact of a higher than expected level of population (630,000). The assumptions behind the utilization of the Gronorth land use and transportation data are the same as the Baseline assumptions; the population level, however, is considerably higher.

Used in conjunction with the Land Use Plan analysis, the Gronorth analysis may relate directly to one of the possible consequences of failure to implement the General Plan.

### (5) Land Use Plan (1980, 1990, 2000) Analysis

The Air Quality analysis of the Land Use Plan is incomplete as of this writing. It is using an emission inventory based on population, land use and traffic volume information developed by the Advanced Planning Staff and the Transportation Consultant. The

emission factors being applied to the data are factors which, in the judgment of the Advanced Planning Staff and Bay Area Air Pollution Control District Staff are most closely aligned with trends in the effectiveness of and political commitment to emission control devices and clean air. The analysis of the air quality situations for 1980 and 1990 are important in demonstrating impacts throughout the planning period. The results may reveal that even with full clean air requirements imposed as scheduled, air quality could get somewhat worse before it comes back to its present condition and then actually improves. The analysis will also determine what may be expected if only partial fulfillment of the Clean Air Act standards is realized.

## **GOALS AND POLICIES IMPLEMENTATION**

The remainder of this summary is devoted to measures intended to implement General Plan goals and policies established for the Air Quality Element. Most General Plan goals are very broad; their purpose is to stimulate awareness and express ideals rather than to achieve specific ends. Many associated policy statements, however, suggest that specific steps be taken by specific agencies.

### **GOALS AND POLICIES RELATED TO TRANSPORTATION**

#### **Goal S**

It shall be the goal of Sonoma County to encourage public participation in the understanding and solving of air quality problems.

#### **Goal V**

It shall be the goal of Sonoma County to encourage voluntary reduction of vehicle miles travelled and promote energy conservation.

These goals are meant to work hand in hand in the hope that increased public awareness of the origin of air quality problems will lead to increased public participation in solving these problems. Individuals tend to think their car is not causing the problem. Voluntary conversion of short vehicle trips to non-polluting transportation, for example, will never take place on any meaningful level without a firm political commitment to raising the level of awareness and encouraging participation.



#### Goal P

It shall be the goal of Sonoma County to have the transportation system developed in a manner which minimizes air and noise pollution.

To this end, it shall be the policy of Sonoma County to:

1. Evaluate the effects of air and noise pollution in transportation system plans and programs throughout the County to provide factual data for corrective action.

#### Planning and Public Works Department

Staff reports to the Planning Commission and Board of Supervisors on proposals for maintenance and construction of major road projects should include a qualitative statement on air quality impacts of each plan and proposal in terms of relationships to the Air Quality Element, the Land Use Plan, and the Transportation Plan. If significant changes in the Transportation Plan are made, traffic volume data and emission translations should be prepared and analyzed to determine air quality implications.

The Environmental Impact Report Division should require that transportation project air quality analysis be performed as part of impact reports for the County be done in compliance with the recommended procedure detailed by the Bay Area Air Pollution Control District.

#### Goal T

It shall be the goal of Sonoma County to have a transportation system developed in a manner which minimizes air pollution.

To this end, it shall be the policy of Sonoma County to:

1. Support a land use pattern which minimizes vehicle miles travelled (VMT) and total number of trips:
2. Promote an efficient and reliable transportation system to reduce the number of air polluting vehicles.
3. Improve the efficiency of the traffic control system.

## Planning Department

Staff reports to the Planning Commission, Board of Zoning Adjustments, and Board of Supervisors on land use proposals of significance should include a statement on the air quality impact of each proposal. If significant changes are made in the Land Use Plan which necessitate modifications in the Transportation Plan, traffic volume data and emission translations should be prepared and analyzed to determine air quality implications.

Land use proposals which fall into the "indirect source" category, as described in existing legislation, should be analyzed by the Environmental Impact Report Division, according to guidelines issued by the Bay Area Air Pollution Control District to enable both Air Pollution Control Districts to issue an "indirect source permit". As has been pointed out in other portions of the Transportation Element a Land Use Plan and corresponding Transportation Plan have been devised to minimize vehicular trips and mileage compared to what otherwise would be likely to occur.

## Goal V

It shall be the goal of Sonoma County to support legislation which addresses itself to air quality problems.

To this end, it shall be the policy of Sonoma County to:

1. Promote clean air standards through local regulation of point sources.
2. Promote clean air standards by supporting the emission control device schedule in effect for mobile sources.
3. Promote the efficient location, design, and operation of indirect sources (stadiums, shopping centers, etc.) so as to reduce local air pollution concentration.
4. Promote vehicle inspection, maintenance and retrofit programs as applied to emission control devices.



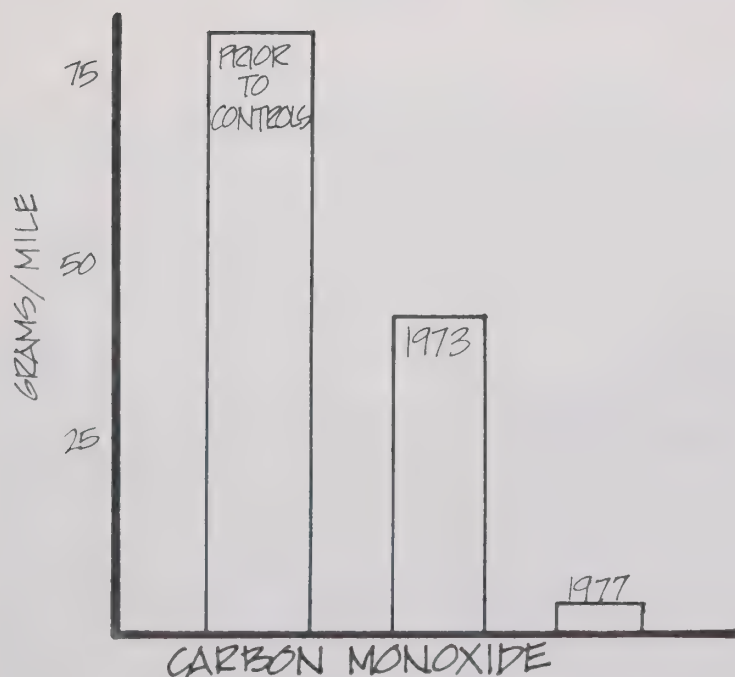
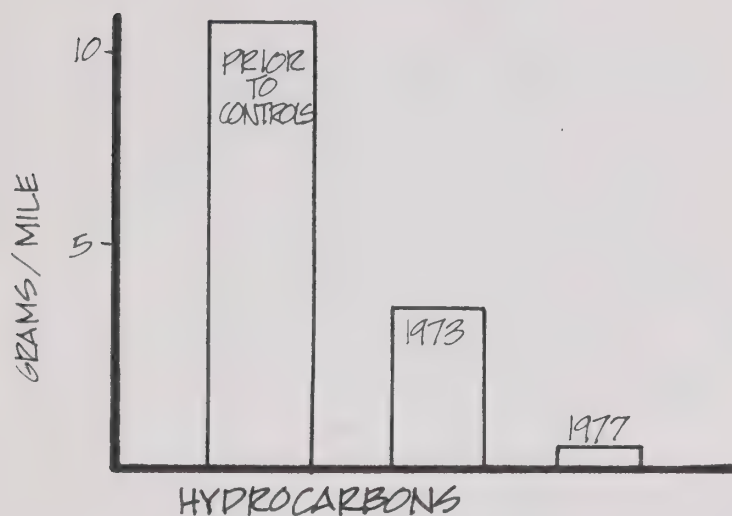
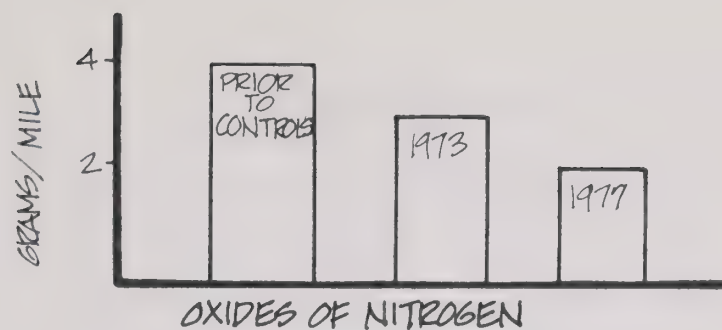
#### Board of Supervisors

The Board of Supervisors should recognize the importance of the achievement of clean air goals and should encourage public awareness in this area. Because failure to implement emission control devices schedules will have adverse consequences to Sonoma County air quality, the Board should prepare a resolution to the state and federal governments which emphasizes the need to adhere to

such schedules. (*See Exhibit 7*). The Board should request joint concurrence of the municipalities. The evidence presented in the Air Quality Element should be included in support of the resolution.

#### County Garage

The Board of Supervisors should direct the County Garage to inspect and maintain all County vehicles at such intervals and at such a standard as will contribute to air quality preservation to the maximum extent possible. County government should set an example of high standards.



## STATE CLEAN AIR ACT

### VEHICLE EMISSIONS COMPLIANCE SCHEDULE

EXHIBIT 7 SOURCE: ADVANCED PLANNING DIVISION



# SCENIC HIGHWAYS

## INTRODUCTION

The variety and beauty of Sonoma County's landscapes are highly prized. A motorist can travel from the urban center of Santa Rosa across the orchard and vineyard covered plain, through a redwood enclosed corridor and reach the Pacific Ocean in one hour. In the same time, he can visit fir covered mountains, grassy hills, or historic sites from California's past. These landscapes are a resource which must be maintained if the character of the County is to be preserved.

By the year 2000 over eighty percent of the population is projected to live in urban areas. For most people, the principal contact with the rural areas of the County will be through the windshield of their car. Preservation of the visual quality of the roadside means preservation of rural areas for most of the County's future population.



The challenge for the Scenic Highways Element is to:

1. Identify the highest priority corridors for preservation and enhancement.
2. Propose ways in which development can proceed within the highway corridor in harmony with the natural or cultural character of the area.
3. Suggest ways in which road facilities can be accommodated within the landscape with the least possible impact on the view from the road.

Maintaining the visual quality of the local roadside corridor could save gasoline which otherwise would be consumed on longer trips. A 1974 report to the President by the Federal Highway Administration recommends developing scenic highways within one hour's drive of urban areas to allow recreational driving close to home. The vital goal of energy conservation can be served by an effective scenic highways program in Sonoma County.

A successful scenic highways program also benefits homeowners along scenic routes. The Scenic Highways Element is oriented to maximizing rustic feeling at any given density of development by proposing ways to harmonize new development with the character of the landscape. Preserving the rural character of scenic highway corridors raises property values.

Scenic highways are safer highways, other factors being equal. A statistical study of a number of scenic highways by Rutgers University showed that accident rates are actually lower on scenic highways than on conventional highways. Clusters of signs and incompatible uses along highways are distracting, and cause accidents. Good scenic highway management saves money and lives by creating a safer driving environment.

## **SELECTING THE SCENIC ROUTE**

Three different types of roadways have been identified as scenic routes: urban routes, rural routes and scenic by-ways. Representative roads of each class were selected as scenic routes. Urban scenic highways are high capacity roads which run through, and between urban areas of the County, carrying the bulk of the traffic; rural scenic highways are medium capacity roads which traverse rural sections of the

County, and scenic by-ways are low capacity roads which pass through remote areas of the County. All offer the opportunity to conserve or develop high quality views from the road.

#### TYPES OF SCENIC HIGHWAYS

##### Urban Scenic Highways

These roads run through either urban areas, urban fringe areas or future development areas. Urban density development is either now a prominent part, or is likely to be a future part of the roadside corridor. Compared to rural scenic highways, there are fewer opportunities to preserve the open space corridor. The typical challenge in urban areas is to:

1. Stop further strip commercial development
2. Eliminate billboards
3. Screen out objectionable features
4. Set design standards on roadside development which are consistent with visual quality

Urban scenic highways are important links in the scenic highways system because they carry the bulk of the county's traffic, and it is desirable for travelers to experience high quality views of the county. The immediate roadside is the principal view afforded those driving urban scenic highways.

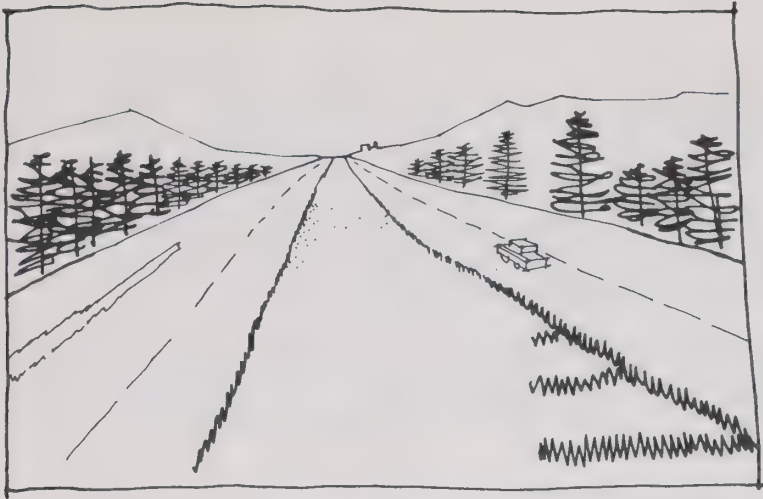
##### Rural Scenic Highways

These are roads of the Sunday driver - easily driven rural roads that carry recreation seekers to parks, campsites and trail heads in the county. They provide the maximum opportunity for motorists to enjoy an uninterrupted sequence of natural landscapes with minimal intrusion of urban land uses.

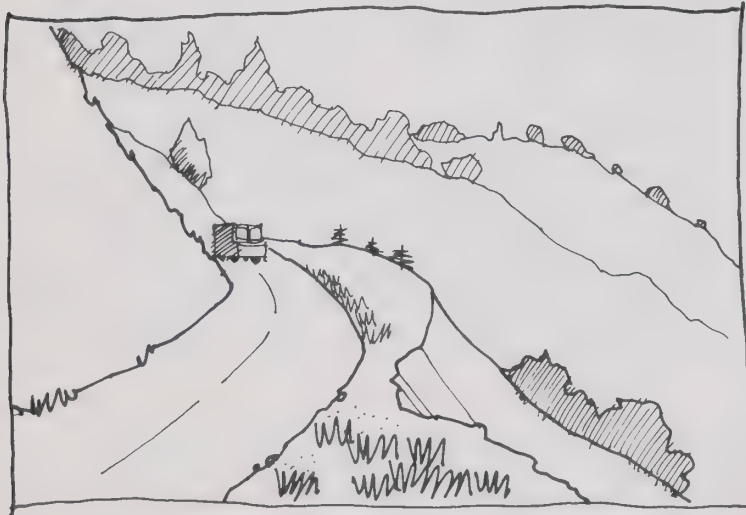
Rural scenic highways are medium and high capacity roads from which the viewer's attention is principally directed to middle and background views.

##### Scenic By-ways

These are low capacity rural roads that either run between major recreational and other traffic generators or are the only road through an area with scenic



URBAN SCENIC HIGHWAY



RURAL SCENIC HIGHWAY



SCENIC BYWAY



characteristics. Their charm depends, in part, on the foreground views which are visible only at low speeds. Because of this, it is important they remain as they are, rambling country lanes that must be travelled at a leisurely pace. It is crucial to the protection of Scenic By-ways that no major traffic generators be located along the road.

Scenic By-ways should not be designated on any widely distributed Scenic Highways Maps. They should remain back road routes, left for discovery by adventurous motorists.

#### SELECTION CRITERIA

Almost every road in Sonoma County is characterized by visual features worth preserving. The task then was to establish standards for the selection of the highest priority scenic roads. The standards relate to three areas. First, they reflect criteria suggested by the statutes related to the scenic highway program; second, they reflect the goals and policies of the General Plan Advisory and Transportation Committees, and lastly, they reflect relationships between the Scenic Highways Element and other elements of the Sonoma County General Plan. All three of these overlap and generate mutually supporting selection standards.

Each road in the scenic highways system should be characterized by:

1. High Visual Quality - this includes the concept of sequential quality where both individual vista points and their relationship as part of a series of visual sequences are considered.
2. Part of a Network - the set of roads proposed as scenic routes constitutes a system. It should be possible to arrange short excursions, day trips, or several day journeys along scenic roads. As the County urbanizes, it will become increasingly important to preserve a network of rural roads which can be toured without passing through built up areas.

3. Connect the Visual Units of the County - the County has been divided into twenty-three visually distinct districts, each with a characteristic landscape. These districts are called visual units. The full extent of the County's varied landscapes should be exemplified along the highway system and therefore a proposed highway passes through each of the visual units. As the motorist sees and appreciates the variety of the County's landscapes, he gains a sense of the County's identity.
4. Access to Recreational Facilities - scenic highways should be visual links connecting the major recreational areas, foot trails, bike paths, and water trails. Scenic highways should be lined with occasional wayside parks and simple turnouts.
5. Recreational Bikeways - an effect of increasing a vehicle's speed is to concentrate the driver's attention into an increasingly narrow cone of vision focussed in the direction in which the vehicle is travelling. The slower the speed, the wider the cone of vision and the more able is the traveller to appreciate the landscape.

Taken from this point of view, the bicycle is the ideal mode for travelling the scenic route. Moving at a leisurely pace, free from the encumbrance of a two ton steel enclosure, the cyclist is more able to see the landscape. Bicycle routes and scenic highways are coordinated to maximize the utility of corridor protection programs and permit multiple use of wayside stops for bicyclists and motorists. For these reasons, the Scenic Highways and Bikeways Elements are directly related.

6. Access to Cultural Points of Interest - scenic highways should illustrate the County's history in the form of historic landmarks and historic districts. Traveller's should have the opportunity to stop and investigate preserved historical sites. Proposed scenic routes pass through the historic districts and the historic corridors as proposed in the Historic Preservation Program.

7. Portals to Cities - in terms of supporting the goal of maintaining a sense of community form and community identity, the entrance ways to cities are vital points along the scenic highways system. These portals should be short transitional zones between city and country. Instead of garish highway advertising and strip commercial, these zones should reveal the visual themes of each city and its rural environs.
8. Visual Access to Open Space Areas - the Scenic Highways Element is strongly related to the Open Space Program. Scenic Highways could be maintained through areas of the county designated as community separators, unique features and scenic areas in the Open Space Plan. An example of such an area and road would be Llano Road passing through the Laguna de Santa Rosa. This area should remain an example of the historic oak studded pasturage characteristic of the Santa Rosa Plain.
9. Implementability - to be useful, the program must be implementable. In one sense implementability refers to citizen support for the Scenic Highways Element. Indications of the shape and direction of the program came from citizen action at the General Plan Advisory Committee level, while exact determination of the content of Corridor Protection Programs should rest with the residents of each locale as expressed in either Scenic Highway Corridor Zoning Studies or as a part of Area Plan Zoning Studies.

## **CORRIDOR VISUAL ANALYSIS**

The Scenic Highways Element Technical Report includes a comprehensive visual analysis methodology for analyzing scenic corridor landscapes. The methodology has several uses. One of them is the analysis of landscapes to determine their vulnerability to development in terms of site planning; this is its most important use. Different types of landscapes have varying potentials to absorb development, and individual landscapes may exhibit variability in their absorption potential.

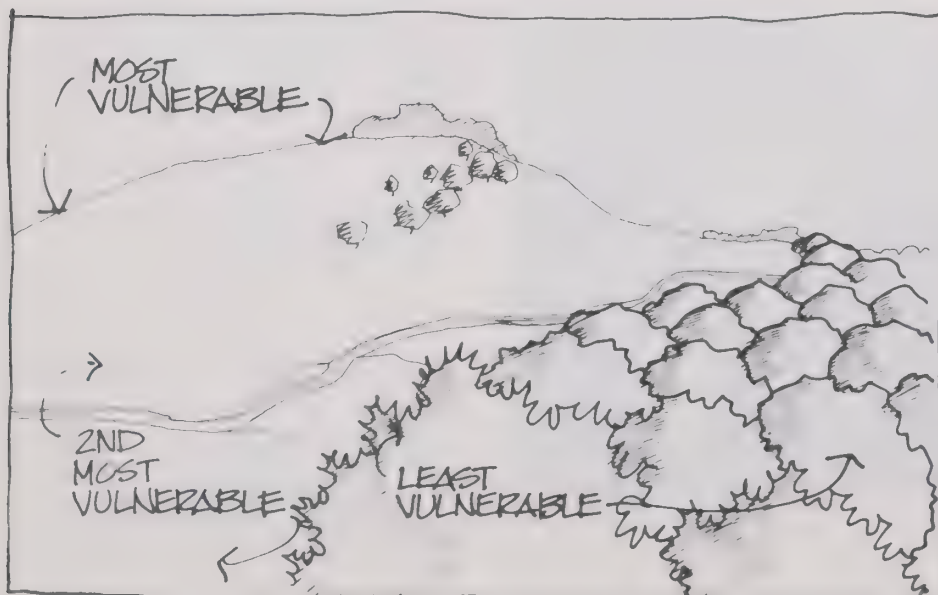
For example, if there are few contrasting features in a landscape it is called simple.

An example of a simple landscape is the hills of Petaluma wind gap which are simple in line and form without the contrast of heavily textured vegetation patterns or the abrupt lines of steep hills.



Landscapes that have many contrasting features are called complex. An example of a complex landscape is the forested hills near River Road. The hills are complex topographically with valleys, rises and plateaus. The vegetative cover is complex, with conifers intermixed with hardwoods and grass. Contrasting colors, forms and lines create a complex landscape. Complex landscapes absorb development better than simple landscapes. Modifications of the landscape create contrasts, and one additional contrasting feature stands out in the simple landscape more than in the highly contrasting complex landscape. A house located on the hillside would be more noticeable in the simple visual environment of the Petaluma wind gap than in the wooded hills near River Road.

Locations within a given landscape vary in vulnerability. For example, a house located on the hillcrest





of one of the West Petaluma hills will be more noticeable than a house located at the foot of the hills. This is because the hillcrest is a simply highly noticeable line. When it is broken by a contrasting feature such as a house, that house become highly noticeable. Hillcrests are generally the most vulnerable locations in a landscape. Other locations within any landscape vary in their vulnerability.

## **IMPLEMENTATION OF THE SCENIC HIGHWAYS ELEMENT**

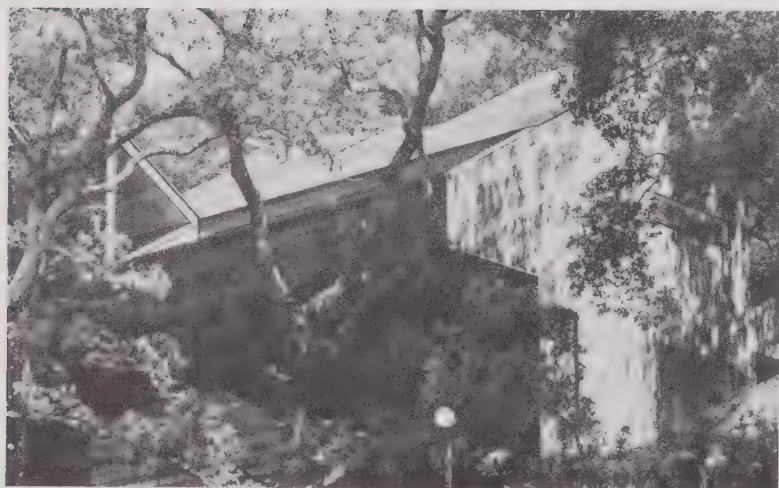
Specific scenic highway implementation proposals are presented below, organized to follow a description of major issues, and arranged in terms of programs to implement each goal and policy statement. Program descriptions include the identity of agencies and their responsibilities.

Most of the recommended implementation steps represent extensions of current programs of continuation of old programs using some new tools of analysis. For example, the meetings and hearings that are necessary to implement scenic highways may frequently be carried out as part of the Area Plan Zoning Study Process.

### RESIDENTIAL DEVELOPMENT ISSUES

#### Location

New structures should be set back from scenic roads as far as practical, and if possible, they should be located in low visibility areas, for example behind



trees or hills. When this is not possible, new development should be located in the least vulnerable areas of the landscape where the colors and textures of vegetation can "absorb" the visual image of development.

#### Design

New development which reflects the simplest elements of a landscape can blend with the surroundings. The use of natural materials and "earthtone" colors helps

houses blend into the landscape. Housing that appears to borrow the colors as well as the lines, forms and textures of the natural landscape, fits best into the landscape. An example is Bennett Valley Knolls, a condominium development at the base of Sonoma Mountains in Bennett Valley. The lines of the roofs seem to lean in ways that reflect the lines of the mountains.

#### Landscaping

Adding trees and shrubbery to a developed area creates a complex environment which more easily absorbs development. For example, by planting around a house on a hillcrest, simple lines which emphasize the location of the house are replaced with complex broken lines which de-emphasize the intrusion of the dwelling.

#### GOALS AND POLICIES RELATED TO RESIDENTIAL DEVELOPMENT

##### Transportation Goal H

It shall be the goal of Sonoma County to have a transportation system that has high environmental and aesthetic quality.

To this end, it shall be the policy of Sonoma County to:

3. Protect the roadside (scenic corridor) of scenic highways in the County by scenic highway zoning.

##### Transportation Goal I (Part)

In the selection of scenic highways and conservation of their corridors, it shall be the goal of Sonoma County to maintain unimpaired views from roads to outstanding examples of all of the County's landscapes ...

##### Transportation Goal L

It shall be the goal of Sonoma County to preserve high visual quality scenic by-ways and their corridors in a natural state.

To this end, it shall be the policy of Sonoma County to:

2. Discourage any residential uses which would visually degrade the by-way corridors or make necessary the upgrading of the existing road standards.

## RESIDENTIAL DEVELOPMENT PROGRAMS

### Planning Department

1. The base zoning of the scenic highway corridors should be combined with Scenic Design Districts as part of the Area Plan Zoning Studies or as part of the Scenic Highway Corridor Studies.
2. Zoning should be amended to include minimum setbacks along the designated scenic highways. This should be accomplished by a staff/citizen committee effort and applied through area zoning studies.
3. A new program called Design Consultation should be incorporated in the Zoning Ordinance. New construction along Rural Scenic Highways and along portions of Urban Scenic Highways should be subject to this review.

Article XVIII and XXVII of the County of Sonoma Zoning Ordinance (Scenic Design District and Architectural and Site Plan Review respectively) should be revised to include references to the Scenic Highways Element and the participation of a Design Consultation Board. The Design Consultation Board would play a review role similar to the local citizens' committee described in Article XVIII, except that the Design Consultation Board would review all residential construction not presently covered by the Design Review provisions. Similar to Design Review, home builders would submit plans for new construction to the Design Consultation Board which should include a planning staff member, members of the architecture and landscape architecture professions, and local residents appointed by the Board of Supervisors. The Design Consultation Board should make recommendations for the location, design and possible landscaping of new development.

The Design Consultation Board's recommendations should not bind the applicant, but the suggestions should help the applicant to design, locate and landscape his home in a way which would harmonize the development with the character of the area.

4. The Scenic Highways Element Technical Report contains a visual analysis methodology that should be used as a tool for this review. A preceeding section of this summary report described part of this methodology.



5. The field representative recommended in the Environmental Resources Management Element General Recommendation No. 4 should be employed, and among his duties should be the monitoring and enforcement of the requirements set forth to assure scenic highway protection.

#### COMMERCIAL DEVELOPMENT ISSUES

Uncontrolled urban strip development is generally not visually pleasing. The Santa Rosa Central Business District and South Santa Rosa Avenue provide a good contrast. The hub of the Santa Rosa Central Business District is visually dominated by the large but simple forms of the commercial buildings surrounding two small parks. The clean and uncomplicated design of the commercial structures can be appreciated from the moving vehicle or be viewed at leisure from the pleasant open space of the parks. South Santa Rosa Avenue on the other hand is a place without sense of structure. It is, with notable exceptions, dominated by bright, confusing colors of signs and by an inharmonious series of structures. This is an environment without visual respite for either the motorist or the pedestrian. It is a dangerous driving environment because the melange of colors and forms disorients the driver.



Some things should be done to improve visual quality of areas like South Santa Rosa Avenue. Existing signs should be replaced with simpler signs that are more easily read. Open storage areas for automobile and trailer sales establishments should be either moved to the back of a building or the storage areas should be screened by fences and trees. Existing trees should be preserved and more trees planted along the roadsides. Uniform road improvements are also needed. The key is to simplify the environment to the point where it can be comprehended and appreciated by the motorist while moving at road speed.



## INDUSTRIAL DEVELOPMENT ISSUES

One way to minimize the visual impact of industrial facilities is to cluster them in industrial parks where they will have limited exposure. Another is to insist on superior design and the use of natural materials. Because there is little need for manufacturing firms to call attention to their operation, their buildings can be constructed with a low visual profile.

Dark earth colors and the use of at least some natural materials help to soften the impact of industrial plants. The steel buildings at Industry West off Todd Road are built in this style, and their visual impact is considerably less than similar facilities in bright colors. Open storage areas can be screened with wooden fences, and landscaping can be added to blend the facility into the landscape. The current work of the Design Review Board in this area has helped to achieve a high standard of design for much of the County's new industry.

## GOALS AND POLICIES RELATED TO COMMERCIAL AND INDUSTRIAL DEVELOPMENT

### Transportation Goal N

It shall be the goal of Sonoma County to protect scenic resources in highway corridors. It shall, therefore, be the policy of Sonoma County to:

4. Discourage the location of new manufacturing and commercial facilities within the scenic corridor.

### Office and Commercial Goal A (Design)

It shall be the goal of Sonoma County to provide for design review procedures for the development of new office and commercial centers and the expansion of existing centers to assure:

2. Compatibility of architectural and site design with the natural resources of the areas affected.

### Office and Commercial Goal B (Location)

It shall be the goal of Sonoma County that office and commercial zoning be compatible with the concept of consolidating growth in cities and communities.

#### Industrial Goal A (Location)

In establishing future industrial sites or relocating currently operating industries, it shall be the goal of Sonoma County to:

Encourage locating industry in proximity to existing or planned urban areas, where sewer services may be available.

- a. Preserve rural, agricultural and recreational lands.
- b. Minimize travel requirements.
- c. Avoid traffic congestion.
- d. Separate incompatible industrial and residential areas.

#### Industrial Goal A (Design)

It shall be the goal of Sonoma County to provide for design review procedures for the development of new industrial areas and the expansion of existing areas to assure:

2. Compatibility of architectural and site design with the natural resources of the areas affected.

#### Transportation Goal L

It shall be the goal of Sonoma County to preserve high visual quality scenic by-ways and their corridors in a natural state.

To this end, it shall be the policy of Sonoma County to:

1. Discourage any non-compatible commercial or industrial development within the corridor of scenic byways.

#### COMMERCIAL AND INDUSTRIAL DEVELOPMENT PROGRAMS

##### Planning Department

1. The clustering of commercial uses recommended in the Community Development Element, section on Commercial/Industrial Land Use supports the Scenic Highway goal of keeping commercial uses outside of scenic highway corridors. It is therefore proposed that new commercial activities be permitted only within projected year 2000 urban areas except where an historical nucleus has developed for such activities outside the urban areas, and

that commercial development should be clustered. This would not preclude the infilling of commercial development along existing roads that are dominated by commercial strip development.

2. The clustering of industrial uses within proposed urban areas recommended in the Community Development Element section on Commercial/Industrial Land Use supports the Scenic Highway goal of keeping industrial uses outside of scenic highway corridors. Commercial and industrial uses that do develop within the corridor should continue to be subject to Design Review.
3. The guidelines for industrial and commercial uses proposed in the Scenic Highways section of the Transportation Element Technical Report and in the Community Development Element report should be used as a tool for Design Review.

#### VISUAL IMPAIRMENT

##### Signs

Signs can heavily impact the landscape. When billboards and signs are dense and crowd the roadside, the effect can be a loss of the sense of the character of the environment whether it be rural or urban.

In an effort to compete for the attention of the automobile occupants, business proprietors may erect increasingly large and more garish signs, vying for attention and at the same time attempting to convey more information than is possible for someone in a moving car to use. The signs thus tend to defeat their own purpose. Billboards should be eliminated from the roadside environment because they detract from the landscape and do not give notice of business being conducted on the property where the sign is located.

The General Plan Citizens' Advisory and Transportation Committees have adopted a policy which calls for a moratorium on billboards, replacing them with information plazas where motorists would be able to find information about local restaurants and shops. These information plazas should be located at scenic points near the cities where motorists could pause to enjoy characteristic views of the local landscape while deciding which local services to use.

An alternative to this concept is the practice which can be observed along Interstate 5 in Oregon where the identification of businesses in close proximity to freeway intersections is accomplished on a single attractive roadway sign which includes small scale (but easily visible) replicas of their emblems or company symbols. The need for large signs occupying the air space at interesections is therefore minimized.

On-site advertising is necessary to inform the motorist as to the location and nature of the shop or restaurant; it should be designed so as to be distinct and noticeable, but not conflict with the landscape. This effect is achieved in many places in the County today. One can contrast the simple signs of establishments on Route 12 from Farmers Lane through the Valley of the Moon to some of the signs and billboards along the same road in the area of the Laguna de Santa Rosa between Santa Rosa and Sebastopol. In the first case, the information is there for those who want it on signs which harmonize with the landscape. In the second case, the total overload of information makes it difficult for motorists to locate site identifying signs.

#### Utilities

The location and design of utility poles and lines have a significant impact on the visual quality of the landscape. This is particularly true for the view from a moving vehicle. Heavy utility lines appear to rise and fall in rapid succession as the auto borne traveler speeds along the highway. The undulating utility line is especially disruptive to the landscape if the line appears to break the lines of background hill crests.

The simplest way to deal with utility poles and lines is to underground all ground facilities, but this is expensive and may be done only in a limited number of places. Another alternative is to encourage multiple use of single poles by telephone and electric service. Also, utility lines and poles may be located in less vulnerable locations within the landscape. For





example, tall poles may be used for carrying lines above the vulnerable hill crest line, and where one side of the road is more visually complex than the other, utility poles and lines may be located on that side of the road.

Transmission towers should be designed as simply as possible and they should be located in the most inconspicuous locations in the landscape.

#### GOALS AND POLICIES RELATED TO VISUAL IMPAIRMENT

##### Transportation Goal I

In the selection of scenic highways and conservation of their corridors, it shall be the goal of Sonoma County to maintain unimpaired views from roads to outstanding examples of all of the County's landscapes; to maintain and develop the scenic quality along the principal approaches to the cities and other communities of the County, and to assure unimpaired visual access from roads to Open Space Areas especially those set aside to define Community Form.

##### Transportation Goal N

It shall be the goal of Sonoma County to protect scenic resources in highway corridors. To this end, it shall be the policy of Sonoma County to:

1. Permit as advertising signs only on premise signs which advertise business conducted on the property and that are limited in size, number and design.
2. Develop information plazas at entry ways to communities and cities at which location signs indicating businesses of interest to visitors will be attractively gathered and presented under a system of design standards applied county-wide.

##### Utilities Goal A

It shall be the goal of Sonoma County to provide facilities which meet the utility needs of the public and are of high ecological and aesthetic quality.

To this end, it shall be the policy of Sonoma County to:

1. Adopt a general plan of utility services to supply the needs of the people of Sonoma County for electricity, natural gas, telephone, Cable TV, water and sewer.
2. Require the review of the proposed location of new public utilities to evaluate their consistency with adopted goals and policies of Sonoma County.
3. Oppose the routing of major transmission lines through public recreation and scenic areas, not consistent with the adopted general plan for utility services adopted pursuant to Policy No. 1.

#### PROGRAMS RELATED TO VISUAL IMPAIRMENT

The Planning and Building Inspection Departments

1. Article XXVI related to sign regulations of the County Zoning Ordinance should be amended to prohibit off-site advertising except as joint exhibits in selected locations and to extend the design review process to these advertising signs. The guidelines in the Scenic Highway Section of the Transportation Element Technical Report for advertising signs should be used as a tool for this purpose. Sites for information plazas along major routes should be designated as part of future scenic highways program work; a joint exhibit pilot project should be developed as well. This should be a staff/citizen committee effort, and should involve members of the business community and advertising industry.
2. The Zoning Ordinance should be amended to provide for the amortization of signs made non-conforming by the above amendment.
3. The location of new utility poles and lines along the selected scenic highway routes should be subject to the design review procedure. Criteria should be set forth in the General Plan for utilities indicated in Program 4.

#### 4. Sonoma County Utility Undergrounding Committee

High priority sites for undergrounding of utility lines should be designated in the general plan of utility services, using the Scenic Highways Element as a major guide. The Utility Undergrounding Committee should participate in the preparation of this general plan element.

#### 5. Utility Companies

Section 320 of the Public Utilities Code requires undergrounding of "all electric and communication distribution facilities which are proposed to be erected in proximity to any highway designated a state scenic highway." This refers to state highways designated as scenic by the State Scenic Highways Committee. Route 12 through the Valley of the Moon is currently the only highway so designated. This would be a requirement if portions of other state highways are placed in the state scenic highways system. Some segments of Highways 1, 121 and 37 have been classified as candidates.

### HIGHWAY ALIGNMENT AND CONSTRUCTION, AND EARTHMOVING ACTIVITIES ISSUES

#### Earthmoving

Earthwork activities have the potential to scar the land. Where topsoil is moved and not replaced, natural patterns are disturbed. Earthmoving operations should be followed by operations to re-establish vegetation to bind the soil together to prevent water or wind erosion, and re-establish a natural appearance. Where access roads are cut into steep hillsides, the cuts have the potential to become prominent visual features. Access roads into some steep areas, for example off Mark West Springs Road, are easily screened. Access roads into open hilly areas, such as some places on Westside Road, should be developed following the lines of the land form because development that follows the natural lines of the landscape will have the least visual impact.

#### Cut and Fill

Road cuts and fills can have negative impacts on the view from the road. They may display lines that are foreign to the natural landscape and block dramatic hill crest views. A road cut that matches the lines

of the landscape can grace the highway. With proper alignment the road cut can focus the view on particular features. An example of this can be found on River Road west of the Laguna de Santa Rosa where a hillside road cut creates a sequence of views of Black Mountain and a vineyard covered valley.



Where bedrock is not involved, highway cuts should be reseeded because roadway cuts left in an unrehabilitated state may erode.

### Materials in Highway Construction

The harmony of the highway with the rural landscape can be increased using natural materials and natural colors. Highway driver information signs are just as noticeable set in wood as in metal. Guard rails can be made out of materials which "weather" to dark natural colors and blend with the landscape. The county and state are presently carrying out programs which blend road structures into the landscape. The County has incorporated natural materials into concrete bridges constructed near Freestone on Old Bohemian Highway and Bennett Valley Road near Warm Springs Road.

### Highway Alignment

The alignment of the highway determines what is in the driver's line of sight. A road that is curved insures that the motorist's attention is directed toward an evolving view. Part of the beauty of driving Route 12 through the Valley of the Moon is related to the gracefully curving alignment of the road which directs the motorist's attention towards a variety of views. On the other hand, a view from a long straight stretch of road driven at highway speeds may tend to become tedious.

Road alignments have been traditionally designed using the curve and tangent. Necessary curves in a road are mapped out and connected by tangents (straight lines). It is possible to substitute gently curving



lines for straight lines. This produces a more varied view from the road and is preferable from that standpoint.

From a safety standpoint, it is not as necessary to eliminate all turns from roads, as it is to hold the turns to a uniform radius that allows the driver to anticipate the severity of the curve.

#### GOALS AND POLICIES RELATED TO HIGHWAY ALIGNMENT AND CONSTRUCTION, AND EARTHMOVING ACTIVITIES

##### Transportation Goal H

It shall be the goal of Sonoma County to have a transportation system that has high environmental and aesthetic quality.

To this end, it shall be the policy of Sonoma County to:

1. Plan proposed transportation routes including major and secondary highways, bicycle and bridle paths to be compatible with natural processes and land forms;
  - a. Geological features including fault zones, slide and erosion areas shall be carefully considered
  - b. Lands with prime natural resources - agriculture, forests, recreation, scenic, etc., shall be protected

#### HIGHWAY ALIGNMENT AND CONSTRUCTION AND EARTHMOVING ACTIVITIES PROGRAMS

##### Public Works Department

1. It is recommended that the geologist provisions of Chapter 70 of the Uniform Building Code be fully enforced as proposed in the Environmental Resources Management Element.
2. The Scenic Highways Section of the Transportation Element Technical Report contains guidelines for roadcuts to minimize this visual impact. These guidelines should be used as a tool by Public Works in the design of roadcuts. Public Works should purchase a hydromulching machine that inexpensively reseeds sloped surfaces.
3. Realignment of scenic highways should be subject to local meetings.

3. An evaluation of the impact of the view from the road and to the road should be conducted as part of the Environmental Impact Evaluation Process for realignment of existing roads and alignment of new roads that have been designated by the County as scenic. The visual analysis methodology contained in the Transportation Element Technical Report should be used as a guide in the reconnaissance stage of evaluation as well as in subsequent steps.

#### Planning Department

1. The visual effects of proposed earthwork operations on the site of residential construction should be considered by the Design Consultation Board in its review of that construction.
2. The Planning Department and the Department of Public Works should cooperate to develop new ways in which natural materials can be incorporated into highway construction.

#### Planning Commission

When major realignment, improvement, or reconstruction of roads in designated scenic corridors is proposed by the Department of Public Works, the Planning Commission, in responding to its responsibilities set forth in Government Codes 65401 and 65402, should conduct public meetings at an early stage of project planning in order to receive local comment. The impact on the view from the road should be considered as an issue. The view of the road from surrounding areas should also be considered.

#### ROADSIDE LANDSCAPING

In a rural area, roadside landscaping can help to blend the highway into the landscape. By the use of appropriate vegetation, the highway right-of-way can be made into a transitional area between the road structures and the landscape. Landscaping does not have to be massive and continuous to improve the view. Trees with a dominant form absorb the traveller's attention and development immediately behind the trees is less noticeable.

Where it is necessary to remove trees to accommodate essential road improvements in rural areas, a replacement program should be carried out.

In urban areas, roadside landscaping may be used to screen objectionable features from view. It is a high priority concern that such a screening program be developed for Route 101, south of the City of Santa Rosa, where commercial uses line the freeway frontage roads.

#### GOALS AND POLICIES RELATED TO ROADSIDE LANDSCAPING

##### Transportation Goal N

It shall be the goal of Sonoma County to protect scenic resources in highway corridors.

To this end, it shall be the policy of Sonoma County to:

3. Encourage the use of native plants for screening and landscape development purposes.

##### Transportation Goal H

It shall be the goal of Sonoma County to have a transportation system that has high environmental and aesthetic quality.

To this end, it shall be the policy of Sonoma County to:

Treat landscaping as an integral part of transportation facility construction and emphasize use of native trees and plants.

#### ROADSIDE LANDSCAPING PROGRAM

Comprehensive Employment Training Act (CETA) Program and California Department of Transportation (Cal Trans)

County CETA funds should be transferred to Cal Trans to plant screening trees and shrubs to Cal Trans specifications and to maintain the plantings for the first year following planting.

##### The Water Agency

The Water Agency should supply water to Cal Trans and Department of Public Works trucks for the irrigation of first year plantings along State Highways and county roads.

##### The State Division of Forestry

The Division should supply seedlings at cost for use by Cal Trans and Public Works.

## STATE DESIGNATION OF SCENIC HIGHWAYS

The County may apply for designation of any county roads and some state highways as official state scenic highways. State designation is accompanied by California Poppy signs posted along the route, and by the distribution of identification maps on a statewide basis. The installation of Poppy signs has been accomplished for Highway 12 in Sonoma Valley. State designation establishes the possible use of the Williamson Act for non-agricultural open space and an increased probability of achieving the undergrounding of utility lines.

In order to achieve state designation, both the state and a county must take certain steps according to Section 261 of the Streets and Highways Code:

"The standards for official scenic highways shall require that local governmental agencies have taken such action as may be necessary to protect the scenic appearance of the scenic corridor, the band of land generally adjacent to the highway right-of-way, including, but not limited to 1) regulation of land use and intensity (density) of development; 2) detailed land and site planning; 3) control of outdoor advertising; 4) careful attention to and control of earthmoving and landscaping; and 5) the design and appearance of structures and equipment."

The California Department of Transportation will prepare a general study of the highway corridor, entitled the Scenic Highway Report, at the request of a county. The county must then prepare a specific plan for the corridor which, if acceptable to the State Scenic Highway Advisory Committee, leads to official designation of the Highway.

The General Plan Advisory and Transportation Committees believe that it should be left to the option of the residents of the area adjacent to county designated routes as to whether they would like official state scenic highway designation. The Highway 12 determination resulted from the work of the North Sonoma Valley Zoning Study which involved local residents in Sonoma Valley.



## GOALS AND POLICIES RELATED TO STATE DESIGNATION OF SCENIC HIGHWAYS

### Transportation Goal M

It shall be the goal of Sonoma County to recognize that overuse induced by publicity can destroy the visual resources which should be protected.

To this end, it shall be the policy of Sonoma County to:

1. Not seek official scenic highway designation with its accompanying statewide publicity unless specifically requested to do so by citizens residing in the vicinity of county Scenic Highways.
2. Not "sign" scenic highways as such unless specifically requested to do so by citizens residing in the vicinity of county Scenic Highways.
3. Not distribute public relations maps of the Scenic Highway System.

## STATE DESIGNATION OF SCENIC HIGHWAYS PROGRAM

Recommendations relevant to this subject are found in the concluding section of this report entitled "General Recommendations for the Scenic Highway Element".

## RELATIONSHIPS TO OTHER GENERAL PLAN ELEMENTS

The Sonoma County General Plan is comprehensive and it reflects many interrelated issues and recommendations. The Scenic Highways Element should not be regarded as an independent and separate element. It has not been designed in this manner, and in fact there are mutually supporting references relating to Scenic Highways in all three of the basic elements of the General Plan. There is a particularly strong interrelationship with the Open Space and Regional Parks components of the Environmental Resources Management Element, and with the Bikeways component of the Transportation Element.

Graphically, this is expressed by including the proposed recreational bikeways system on the Scenic Highways map attached to this report, and by including scenic highways corridors in the critical Open Space Areas map which is a feature in the Environmental Resources Management Element Summary and

Technical Reports. Also illustrated on the Critical Open Space Areas map are "Unique Features" which include Regional Parks. The Scenic Highways system was developed with connecting links to parks and other unique features as a major consideration.

#### GOALS AND POLICIES INVOLVING RELATIONSHIPS TO OTHER GENERAL PLAN ELEMENTS

##### Transportation Goal J

It shall be the goal of Sonoma County to maintain and develop the scenic quality of corridors along the principal approaches to cultural and recreational resources.

To this end, it shall be the policy of Sonoma County to:

- I. Protect from visual degradation and to enhance the corridors of all roads, but especially those which connect to:
  - a. Regional Parks
  - b. Bike, hiking and water trail heads
  - c. Historic districts and other historic sites
  - c. Points of special interest

##### Transportation Goal K

It shall be the goal of Sonoma County to encourage a variety of transportation modes within scenic corridors.

To this end, it shall be the policy of Sonoma County to:

- I. Coordinate the development of recreational bike-way, equestrian and foot trails and scenic highway routes.

#### PROGRAMS RELATED TO OTHER GENERAL PLAN ELEMENTS

Recommendations relevant to this subject are found in the concluding section of this report entitled "General Recommendations for the Scenic Highway Element".

#### **RECOMMENDED SEQUENCE TO IMPLEMENT THE SCENIC HIGHWAYS ELEMENT**

- I. The Planning Commission and Board of Supervisors should adopt the Scenic Highways Element and recognize the adoption of the Bikeways, Regional Parks and Open Space recommendations of the Transportation and Environmental Resources Elements as necessary and supporting actions.

2. A visual analysis should be conducted of roadway corridors oriented toward developing a detailed landscape analysis for the corridors to serve as a guide for the site location and design of residential, commercial and industrial uses. The Visual Analysis Methodology presented in the Scenic Highways section of the Transportation Element Technical Report should serve as a guide for this analysis.
3. Subsequent to Scenic Highways Element adoption, a program should be developed to notify residents and property owners within the corridors of each designated scenic route of the inclusion of the route in the element. The benefits of implementation of scenic highways would be explained in an enclosed circular. The emphasis in this circular would be on specific benefits to property owners as well as the general benefits described in the introduction to this summary. These benefits include:
  - a. Design consultation which gives residents a measure of control over the type of development going into their area.
  - b. The preparation of standards and requirements for development review aimed at protecting the scenic qualities of the corridor.
  - c. Public meetings on major road realignment and improvement projects being proposed which allow citizens to participate in decision making for the design and location of realigned, improved or reconstructed scenic highways.
  - d. State designation of the scenic road as an official scenic highway if desired.
4. Local public meetings should be held for discussion of the implementation program for the scenic route. Local residents of the county designated scenic highway corridor should have the opportunity to discuss the type of implementation program that they desire for the route. Planning Department and Public Works Department staff should present detailed Corridor Analysis for each route. Wherever possible, these steps should be taken as aspects of area studies undertaken for land use determinations.

5. The administrative steps necessary to secure official state scenic highway designation are listed in the Scenic Highways Technical Report. The Planning Department and Public Works Department should assist local residents in obtaining official State Scenic Highway designations if petitioned to do so, and upon a directive from the Board of Supervisors.
6. The final step in the designation process should be hearings before the Planning Commission and Board of Supervisors on the subject of the scenic designation and the associated implementation program.
7. The highest priority roads for implementation as scenic highway corridors whether or not state designation is the objective should be regarded as:
  - a. Urban Scenic Highway: Route 101
  - b. Rural Scenic Highway: River Road and Green Valley Road
  - c. Scenic By-Way: Coleman Valley Road



## THE SCENIC HIGHWAYS PLAN

The Scenic Highway Map illustrates the routes selected from each road class and some of the important factors that went into the selection process.

### URBAN SCENIC HIGHWAY

These are the high capacity roads that pass through urban areas of the County carrying the bulk of through and local traffic.

### RURAL SCENIC HIGHWAY

These are the easily driven rural roads that carry recreation seekers to parks, campsites and trail heads.

### SCENIC BY-WAY

These are the low-capacity roads that ramble through the remote areas and should not be publicized on any widely distributed scenic highways map.

Together urban scenic highways, rural scenic highways, and scenic by-ways constitute the scenic highway system.

### ROADWAY BICYCLE TOURING ROUTE

Proposed bicycle routes and scenic highways should be coordinated to maximize the utility of preserving the corridor visual quality. Coordinating bicycle routes and scenic highways also permits multiple use of wayside stops for bicyclists and motorists.

### VISUAL UNIT BOUNDARY

The visual quality of the road corridors was an important criterion for selecting scenic routes. For visual analysis purposes, the County has been divided into twenty-three visual units. A scenic highway has been selected to run through each of these districts.

### PORTAL TO CITY

The approximate location of the entrances to cities are shown as Portals to Cities on the Scenic Highways Map. Entrances to cities are vital points in the County's geography. Ideally, they should be sharp points of transition between city and county where the city is seen in relation to the surrounding countryside.

### HISTORIC DISTRICT

Scenic highway routes were coordinated with the proposed historic districts, because scenic highways should reveal the County's past to the traveller.

### STATE AND COUNTY PARKS, AND PROPOSED RECREATION AREAS

The location of existing and proposed recreational areas was used as a criterion for the selection of scenic routes, because scenic highways should be visual links connecting recreational areas.





# SCENIC HIGHWAYS

## LEGEND

- URBAN SCENIC HIGHWAY
- RURAL SCENIC HIGHWAY
- SCENIC BYWAY
- ROADWAY BICYCLE TOURING ROUTE
- VISUAL UNIT BOUNDARY
- PORTAL TO CITY
- HISTORIC DISTRICT
- STATE AND COUNTY PARKS
- PROPOSED RECREATION AREAS



## TRANSPORTATION

SONOMA COUNTY GENERAL PLAN







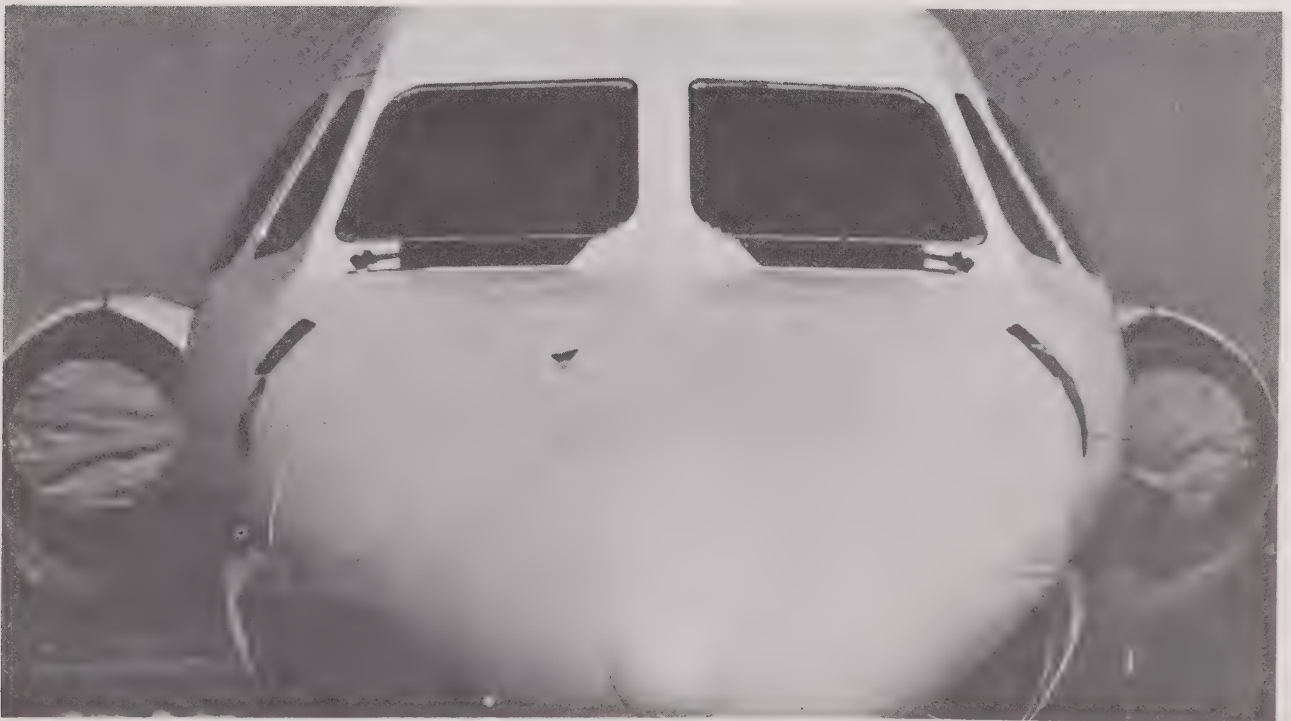


# AVIATION

## INTRODUCTION

The Aviation component of the Transportation Element is being presented in preliminary form, with a final version expected in 1976. This report is intended to set the stage for subsequent work to be done on aviation. Included in this report are descriptions of the existing situation in regard to general aviation in Sonoma County and the scope of activities which will be required in order to produce a countywide Aviation Element.

The overall purpose of the Aviation Element will be to prepare a plan for the location, protection and ultimate expansion of general aviation airports in the County. The Aviation Element will integrate plans being done for individual airports, such as the Sonoma County Airport Master Plan and the South County study (the Sonoma Aviation Master Plan), and suggest further studies which need to be done in order to develop a fully integrated



countywide system of general aviation facilities. Developing an Aviation Element will also involve evaluating alternative countywide general aviation possibilities before settling upon a countywide system of airports and levels of service.

Planning for aviation, particularly when new or significantly expanded facilities are being considered, requires a long range perspective because of the large amount of land needed for, and directly affected by, airports. Because Sonoma County is projected to substantially increase its population during the next 25 years, the County is expected to experience increasing demand for airport facilities for both public and private use. The Sonoma County Airport alone will not be able to meet the total demand for service; in fact, it appears that the County could experience a serious deficiency in airport facilities by 1985 if plans are not made and executed soon to meet the growing demand in the south and central area of the County.

The Aviation component of the Transportation Element is directly related to the Noise, Air, Land Use, Housing, Circulation and Transit Elements of the General Plan. The Aviation Element will be evaluated with reference to these companion elements. Reference will also be made to Scenic Highways and to related aspects of the Environmental Resources Management Element.

## **REGIONAL RELATIONSHIP**

For planning purposes, regional aviation plans including Sonoma County are done by the Bay Area Regional entities, the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). Regional plans thus far developed have not dealt in depth with general aviation airports, and therefore, have not met Sonoma County's own needs in developing a Countywide Aviation Plan. Probably the most significant finding for Sonoma County is that recent studies, by both ABAG and the State, indicate that a regional scale airport facility will be needed in the North Bay area in Napa, Marin, or Sonoma County.

In considering its regional setting Sonoma County will consider its relationship to Mendocino and Lake Counties as well as to the nine county Bay region. These two counties affect Sonoma County differentially with Mendocino's effect primarily upon Cloverdale and Lake's on recreation oriented aviation demand.

## SONOMA COUNTY AIRPORT FACILITIES

The present system of airports in Sonoma County includes eight public use airports and five private use airports, according to current Federal Aviation Administration (FAA) statistics:

### PUBLIC USE AIRPORTS

1. Cloverdale Municipal
2. Healdsburg Municipal
3. Petaluma Sky Ranch
4. Potterton
5. Santa Rosa Air Center
6. Sonoma County Airport
7. Sonoma Sky Park
8. Sonoma Valley Airport

### PRIVATE USE AIRPORTS

9. Alexander Valley
10. Flying "K" Ranch
11. Graywood Ranch
12. Mazza
13. Sea Ranch

Only three of the public use airports are publicly owned; Cloverdale and Healdsburg Municipal Airports, and the Sonoma County Airport. Two additional public use airports were listed by the FAA but are no longer used as airports - Santa Rosa Coddington, and Tri-County Copters. A preliminary inventory of existing public use airports has been done, with information provided by Mr. Robert Dunn, County Director of Aviation. A brief description of the status of each of these airports follows:

# AIRPORTS



## PUBLIC USE

- 1 CLOVERDALE MUNICIPAL
- 2 HEALDSBURG MUNICIPAL
- 3 PETALUMA SKY RANCH
- 4 PUTTERTON
- 5 SANTA ROSA AIR CENTER
- 6 SONOMA COUNTY AIRPORT
- 7 SONOMA SKY PARK
- 8 SONOMA VALLEY AIRPORT



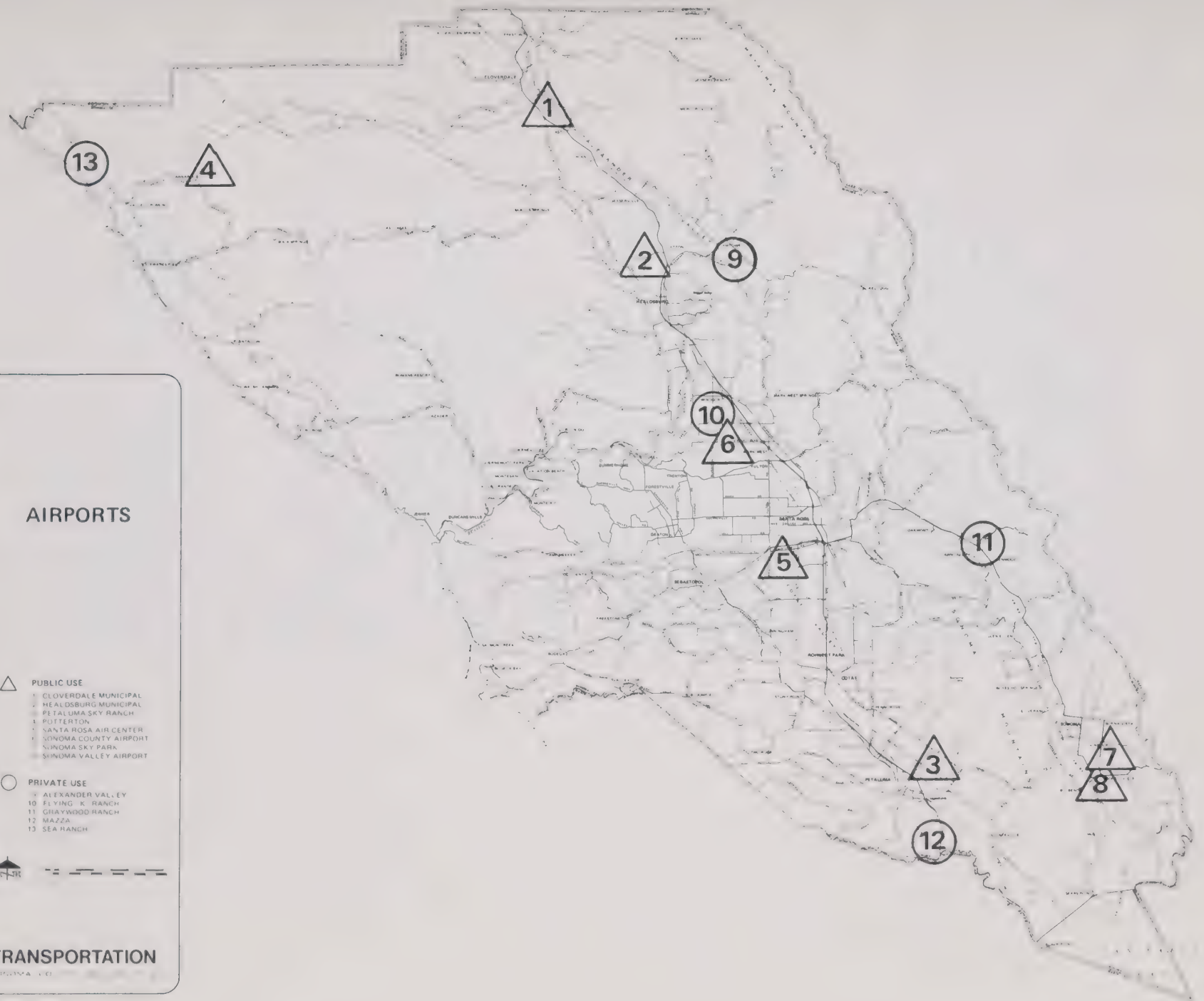
## PRIVATE USE

- 9 ALEXANDER VALLEY
- 10 FLYING K RANCH
- 11 GRAYWOOD RANCH
- 12 MAZZA
- 13 SEA RANCH



# TRANSPORTATION

NOT TO SCALE





#### CLOVERDALE MUNICIPAL AIRPORT

The existing airport lies within the County's recommended year 2000 expansion area for the City. The airport is located within the 100 year floodplain and in an area which will be set aside by the City largely for industrial development. It does not appear that projected land uses will interfere with airport operations. The primary restriction other than density restrictions within the runway clear zone and within the 30 NEF noise contour, will probably be height limitations in the airport vicinity. The airport is not anticipated to expand significantly within the next 25 years.

#### HEALDSBURG MUNICIPAL AIRPORT

The existing airport is located well outside the projected 25 year expansion area of the City of Healdsburg. Low densities are recommended in the County's proposed Land Use Plan in the airport environs and should not be affected adversely by airport activities, assuming suitable development guidelines are established. The existing location is adequate for existing airport activities and the facility could be expanded if necessary.

#### PETALUMA SKY RANCH

The existing facility lies well within the County's proposed 25 year urban expansion area east of McDowell Avenue, and is inadequate in its present location. A site selection study is presently being conducted, with the most likely sites being located in the vicinity of the existing airport. Careful attention will have to be paid to this study, both because of the need for a site in the Petaluma area suitable to meet the demand of a growing population and because of the potential for urban growth east of Petaluma between McDowell Avenue and Adobe Road.

#### POTTERTON

This airport facility is located near the small community of Annapolis in the Northwest portion of the County. The facility is adequate for its present use, oriented to flights associated with the logging industry.

## SANTA ROSA AIR CENTER

This airport facility is located well inside Santa Rosa's proposed Growth Management Line and the County's proposed year 2000 urban boundary. At present, the Air Center is used for general aviation on a small scale. An Air Center Master Plan study is being proposed by Mr. Robert Dunn to evaluate the feasibility of continuing the Air Center as a general aviation facility or of locating another site in the Rohnert Park-Santa Rosa area. The Sonoma County Airport Master Plan concludes that the Air Center will be unsuitable for general aviation in the 1980's but that an additional airport in the Santa Rosa Area will be required by the late 1980's in order to meet demands for general aviation.

## SONOMA SKY PARK AND SONOMA VALLEY AIRPORT

These two airports are located south of the City of Sonoma, well outside the County's proposed year 2000 urban boundaries. The Sky Park is already inadequate for general aviation purposes because surrounding residential development is located too close to the runway. The Sonoma Valley Airport, on the other hand, probably will be retained as a small scale, general aviation facility.

A Sonoma Aviation Master Plan is presently being done and is projected to be completed by April, 1976. The study includes selection of a site for a new facility, the most probable location being close to the Sky Park. The study also includes site selection for the Petaluma area. The idea of finding one site suitable for both Sonoma and Petaluma is being explored, but it is more likely that separate sites will be recommended.

## SONOMA COUNTY AIRPORT

This airport is located well outside the County's projected urban boundaries for Santa Rosa, Larkfield/Wikiup and Windsor. It is the hub of air transportation in Sonoma County. It is a scheduled passenger service airport. It provides service for both public and private use, including small jet aircraft and large fire fighting aircraft. Although it is by far the County's largest facility, it cannot serve the needs of the whole County for general aviation.

A Master Plan for the Sonoma County Airport has recently been completed. <sup>(1)</sup> Major conclusions of this Plan include:

- a. the primary role of the County Airport will be to serve general aviation but that commuter air carrier service to San Francisco will continue to grow and commuter flights to Los Angeles will probably be available in the future;
- b. the airfield is reaching operational capacity and the construction of a parallel runway and extending existing runway length will be required;
- c. an additional general aviation airport will be required in the Santa Rosa Area by the late 1980's;
- d. surrounding projected land use is compatible with the Airport and plans for future land acquisition.

It appears likely that at least three additional general aviation airports will be needed in the future, in the Sonoma, Petaluma, and Rohnert Park-Santa Rosa areas. In addition to these needs, it is possible that a new airport will be built in the Bodega Bay area, to serve recreation-oriented demand. The feasibility and desirability of such an airport should be studied thoroughly before a decision is made.



The Sonoma County Airport Master Plan indicates that expansion of the existing airport will be required. The Plan does not, however, address the question of upgrading the Sonoma County Airport to the status of a regional, large scale airport. It is unlikely that a regional scale airport is desired for Sonoma County. The General Plan Advisory and Transportation Committees advocate that the Sonoma County Airport

(1) Arnold Thompson Associates, Inc. and Wilbur Smith and Associates  
Master Plan Report, Sonoma County Airport, 1975.

serve as the only feeder airport in the County capable of handling medium commercial carriers connecting the County with the major regional airports.

## **WORK PROGRAM FOR AVIATION ELEMENT DEVELOPMENT**

Work on the Aviation component of the Transportation Plan is presently scheduled to be conducted during 1976, beginning in March. A tentative schedule follows:

- MARCH-JUNE:*
- a. develop Aviation program design
  - b. determine resources for conducting work program
  - c. develop additional goals and policies for aviation
  - d. determine procedure for review of goals and policies
- JULY-SEPTEMBER:*
- a. conduct Aviation study
  - b. compare study results with goals and policies
  - c. develop final phase of the Aviation Element based on goals and policies
- OCTOBER-DECEMBER:*
- a. public review of Aviation Element
  - b. revision of Aviation Element
  - c. adoption of Aviation Element

The forthcoming countywide aviation study will be coordinated with the County Aviation Director. His office will provide much of the information which will be needed in order to develop a comprehensive Aviation Element for Sonoma County. The study will also rely upon past and present studies, particularly the Sonoma County Airport Master Plan and the Sonoma Aviation Master Plan. Citizen involvement opportunities should be provided. Although a specific work program for conducting the aviation study has not been developed, a preliminary estimate of the sequence of work activities and scope of the study has been identified. The purpose of the study is to prepare a plan for the location, protection and ultimate expansion of general aviation airports in the County. To accomplish this purpose information and evaluation of the following is necessary:

1. Inventory all public and private airports for runway length, expansion deficiencies and other information.



2. Study compatibility of airport activity with land uses surrounding airports and with noise impacts in surrounding areas generated by airport activity.
3. Review technical literature for such things as likely technological changes affecting aircraft noise, trends in demand for both general aviation use and private plane ownership.
4. Forecasts for all Sonoma County airports of passenger, private aircraft and freight demand for the next 5, 10, 20 years. Evaluate adequacy of the present airport system, the need for new airports or to relocate existing airports.
5. Study economic viability of present airports, costs/revenues of expansion, feasibility of industrial airparks.

The completion of these tasks will provide information with which to prepare a plan for County airports. The plan will include statements on expansion or improvement of present facilities and new facilities needed. The relationship of County airports to others in the region and County airport's adequacy in meeting projected air traffic will be evaluated. The plan will also consider how 5, 10, 20 year travel forecasts might vary for alternate future possibilities.

## **GOALS AND POLICIES RELATED TO THE AVIATION ELEMENT**

### **TRANSPORTATION GOAL D**

It shall be the goal of Sonoma County to have a transportation system that provides the optimum combination of modes in so far as is financially and physically feasible.

To this end, it shall be the policy of Sonoma County to:

6. Develop a plan for a countywide system of air travel facilities to meet the needs of the citizenry of Sonoma County.
7. Develop Sonoma County Airport as the only feeder airport in the County capable of handling medium commercial carriers; such carriers would connect with the major regional airports; maintain the smaller airports in the County as bases for light aircraft only, with appropriate clear zones around these facilities; avoid residential development in approach zones.

# **TRANSPORTATION**

SONOMA COUNTY GENERAL PLAN

**NOVEMBER 1975**

## **APPENDIX**

# **DRAFT ENVIRONMENTAL IMPACT REPORT**

DRAFT ENVIRONMENTAL IMPACT REPORT  
Sonoma County General Plan

On January 7, 1975 a set of amendments to the State Guidelines on E.I.R.'s was adopted for implementation of the California Environmental Quality Act.

Article 9, Section 15148, of the California Environmental Quality Act Guidelines, states that a separate EIR document is not required, provided that the General Plan addresses all the points required, and that it contains a special section identifying where each of the points is addressed. The draft EIR for the Transportation Element identifies where the General Plan document addresses each of the points required, and is accompanied by a list of reference documents.

Any person wishing to acquire the draft EIR and reference documents list, or wishing to review a reference document may do so at the Advanced Planning Division, 2403 Professional Drive, Santa Rosa, Ca. 95401 (telephone (707) 527-2864).

Review and comment on the draft EIR is encouraged. Comments should be mailed to the Advanced Planning Division, at the above address.

## PART III. TRANSPORTATION ELEMENT

(1)

### 1. DESCRIPTION OF PROJECT

#### DOCUMENT REFERENCE

The description of the project shall contain the following information but should not supply extensive detail beyond that needed for evaluation and review of the environmental impact.

- (a) The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map.
- (b) A statement of the objectives sought by the proposed project.
- (c) A general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals and supporting public service facilities.

- (a) 1. Land Use Plan Map  
Document 6
- 2. Regional Map  
Document 7, Page 6
- 3. Planning Area Map  
Document 15, Page 52
- (b) 1. Document 9  
"Transportation"
- 2. Document 17  
"Introduction"
- 3. Document 19
- (c) Document 17, "The Long  
range Transportation  
Plan";  
"The Bikeways Plan";  
"Introduction"

### 2. DESCRIPTION OF ENVIRONMENTAL SETTING

An EIR must include a description of the environment in the vicinity of the project, as it exists before commencement of the project, from both a local and regional perspective. Knowledge of the regional setting is critical to the assessment of environmental impacts. Special emphasis should be placed on environmental resources that are rare or unique to that region. Specific reference to related projects, both public and private, both existent and planned in the region should also be included, for purposes of examining the possible cumulative impact of such projects.

- 1. Document 1, pgs. 4-6
- 2. Document 4
- 3. Document 2
- 4. Document 20
- 5. Document 15,  
pgs. 113-116; 122-125
- 6. Document 17  
"Introduction"
- 7. Document 3
- 8. Document 10



### 3. ENVIRONMENTAL IMPACT

All phases of a project must be considered when evaluating its impact on the environment: Planning, acquisition, development and operation. The following subjects shall be discussed, preferably in separate sections or paragraphs. If they are not discussed separately, the EIR shall include a table showing where each of the subjects is discussed.

- (a) 1. Document 17
- 2. Document 13  
"Evaluation"

- (a) The Environmental Impact of the Proposed Action: Describe the direct and indirect impacts of the project on the environment, giving due consideration to both the short-term and long-term effects.

It should include specifics of the area, the resources involved, physical changes, alterations to ecological systems and changes induced in population distribution population concentration, the human use of the land (including commercial and residential development) and other aspects of the resource base such as water, scenic quality and public service.

- (b) 1. Document 18  
"Circulation and  
Transit"; "Noise";  
"Air Quality"
- 2. Document 6  
"Introduction"
- 3. Document 13  
"Evaluation"
- 4. Document 11  
"Introduction"

- (b) Any Adverse Environmental Effects Which Cannot be Avoided if the Proposal is Implemented: Describe any adverse impacts, including those which can be reduced to a significant level but not eliminated. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described. Describe impacts on aesthetically valuable surroundings, or on human health.

- (c) 1. Document 17
- 2. Document 14  
Chapter 8
- 3. Document 13  
"Evaluation"

- (c) Mitigation Measures Proposed to Minimize the Impact: Describe avoidable adverse impacts, including inefficient and unnecessary consumption of energy, and the measures proposed to minimize these impacts. This discussion shall include an identification of the acceptable levels

to which such impacts will be reduced, and the basis upon which such levels were identified. Where alternative measures are available to mitigate an impact, each should be discussed and the basis for selecting one alternative should be identified. Energy conservation measures as well as other appropriate mitigation measures, shall be discussed. Examples of energy conservation measures are provided in Appendix F.

- |   |   |
|---|---|
| (d) Alternatives to the Proposed Action: Describe reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project, and why they were rejected in favor of the ultimate choice. The specific alternative of "no project" must always be evaluated along with the impact. Describe alternatives capable of substantially reducing or eliminating any environmentally adverse impacts, even if these alternatives substantially impede the attainment of the project objectives, and are more costly.                             | (d) 1. Document 5<br>Section IV<br>2. Document 16<br>Parts I and II<br>3. Document 15<br>Pgs. 18-19; 28-31<br>Part III<br>4. Document 6<br>"Introduction"<br>5. Document 17<br>"Introduction"<br>6. Document 12 |
| (e) The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity: Describe the cumulative and long-term effects of the proposed project which adversely affect the state of the environment. Special attention should be given to impacts which narrow the range of beneficial uses of the environment or pose long-term risks to health or safety. In addition, the reasons why the proposed project is believed by the sponsor to be justified now, rather than reserving an option for further alternatives, should be explained. | (d) Document 17<br>"Introduction"   |
| (f) Any Irreversible Environmental Changes Which Would be Involved in the Proposed Action Should it be Implemented: Uses of non-renewable resources during the initial and continued phases of the project may be irreversible since  | (f) Document 17<br>"Circulation and<br>Transit";<br>"Bikeways"  |

a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts, and particularly, secondary impacts (such as highway improvement which provides access to a non-accessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

- (g) 1. Document 17  
"Introduction"  
2. Document 6  
"Introduction"  
3. Document 13  
"Evaluation"  
4. Document 21

- (g) The Growth-Inducing Impact of the Proposed Action: Discuss the ways in which the proposed project could foster economic or population growth, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may further tax existing community service facilities so consideration must be given to this impact. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental or of little significance to the environment.

4. 1. So. Co. Planning Dept.  
E.I.R. Division  
Mr. Tom Cordill  
Mr. Ray Krauss  
2. County Counsel, Sonoma County  
Mr. Prentice Fish  
3. Madrone Associates,  
Northgate Industrial Park,  
San Rafael, Ca., Ms. Nona  
Dennis, Ms. Remmie King-  
sly  
4. State of California,  
The Resource Agency,  
California EIR Monitor  
5. Association of Bay Area  
Governments, Regional  
Clearinghouse, Library of  
Environmental Information

#### 4. ORGANIZATIONS AND PERSONS CONSULTED

The identity of all federal, state or local agencies, other organizations and private individuals consulted in preparing the EIR, by contract or other authorization must be given.

## 6. CONTENTS OF FINAL ENVIRONMENTAL IMPACT REPORT

### (a) The Final EIR shall consist of:

1. The Draft EIR or a revision of the draft.
2. Comments and recommendations received on the Draft EIR verbatim or in summary.
3. A list of persons, organizations and public agencies commenting on the Draft EIR.
4. The responses of the Lead Agency to significant environmental points raised in the review and consultation process.

### (b) The response of the Lead Agency to comments received may take the form of a revision of the Draft EIR or may be an attachment to the Draft EIR. The response shall describe the disposition of significant environmental issues raised (e.g., revisions to the proposed project to mitigate anticipated impacts or objections). In particular the major issues raised when the Lead Agency's position is at variance with recommendations and objections raised in the comments must be addressed in detail giving reasons why specific comments and suggestions were not accepted, and factors of overriding importance warranting an override of the suggestions.

## 7. DEGREE OF SPECIFICITY

The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.

- (a) An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy.
- (b) An EIR on projects such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan should focus on the secondary effects that can be expected to follow from the adoption but the EIR need not be as detailed as an EIR on the specific construction projects that might follow.



DOCUMENTS FOR ENVIRONMENTAL IMPACT REPORT ON SONOMA COUNTY GENERAL PLAN  
PURSUANT TO REGULATIONS IN CALIFORNIA ADMINISTRATIVE CODE, TITLE 14,  
DIVISION 6, ARTICLE 9

Document	III. Transportation
1.	Association of Bay Area Governments (ABAG) Regional Plan 1970: 1990 San Francisco Bay Region, July 1970
2.	ABAG, Areas of Critical Environmental Concern Review Draft, June 1975
3.	Metropolitan Transit Commission, Regional Transportation Plan, August 1974
4.	North Central Coast Regional Commission, Preliminary Coastal Plan, Regional Supplement, Hearing Draft, March 1975
5.	Sonoma County Advanced Planning Division (SCAPD), Baseline Evaluation, Sonoma County General Plan Bulletin, July 1974
6.	SCAPD, Community Development Element: Sonoma County General Plan Summary, November 1975
7.	SCAPD, Environmental Resources Management Element, Sonoma County General Plan, Natural Resources Inventory Volume 2, October 1974
8.	SCAPD, Environmental Resources Management Element, Sonoma County General Plan Summary, October 1975
9.	Sonoma County Advanced Planning Division, General Plan Goals and Policies, as amended, 1975
10.	SCAPD, JHK and Associates, Sonoma County Public Works Agency; Sonoma County Transportation Study, Phase I, August, 1974
11.	SCAPD, JHK and Associates, Sonoma County Public Works Agency; Sonoma County Transportation Study, Phase II, December 1974
12.	SCAPD, JHK and Associates, Sonoma County Public Works Agency; Sonoma County Transportation Study Phase III, Summary, November, 1975
13.	SCAPD, JHK and Associates, Sonoma County Public Works Agency; Sonoma County Transportation Study Phase III Technical Report, November 1975

14. SCAPD, JHK and Associates, Sonoma County Public Works Agency; Sonoma County Transportation Study, Short Range Transit Report, July 1975
15. SCAPD, Summary Composite Analysis, Sonoma County General Plan Bulletin, March 1975
16. SCAPD, Summary Sketch Plan Alternatives, Sonoma County General Plan Bulletin, October 1974
17. SCAPD, Transportation Element, Sonoma County General Plan, Summary, November 1975
18. SCAPD, Transportation Element, Sonoma County General Plan, Technical Report, 1975
19. SCAPD, Questionnaire Results, Sonoma County General Plan Bulletin, 1975
20. State of California, Office of Planning and Research, Environmental Goals and Policies, June 1973
21. University Research Center Inc, Summary of Population Projections for Sonoma County, May 1975

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Highly important to the preparation of the Transportation Element has been the guidance of the General Plan Advisory and Transportation Committees.



